

SOME EXPERIENCES WITH TRANSORBITAL LEUCOTOMY<sup>1</sup>

## A REVIEW OF RESULTS IN 110 CASES

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The recent inclusion of psychosurgery among the procedures for treating mental disorders has given us clearer insight into the functions of frontal cortical areas and their relationship with subcortical gray nuclei in man's emotional and intellectual endowments. We have gained from these procedures some anatomical, physiological, and psychological understanding of the connections between the frontal lobes and the thalamus. To date many psychiatrists, and physicians in general, question the advisability or desirability of subjecting a patient with even a disabling mental disorder to what they believe is a destructive process and a measure fraught with danger to the personality and life of the individual. This attitude has persisted with the more recent forms of psychosurgery because of the distressing results observed in many patients who have had prefrontal lobotomy as advocated by Moniz(1), Freeman and Watts(2), Poppen(3), and others, yet prefrontal lobotomy is used widely and is routine in some clinics. Although, from the many reports in the literature, it cannot be denied that prefrontal lobotomy has been advantageous, it is also evident that it causes most and perhaps all patients to suffer some personality defect. Ström-Olsen and Tow(4), in an analysis of 125 cases, noted in addition to mild personality deviations such more malignant changes as "unpleasant antisocial traits, tactlessness, apathy and inertia, excessive volubility, greediness, deceit, rudeness, egocentricity, marked coldness of emotional response, spitefulness, and absence of sympathy, tolerance and kindness."

We have sought a procedure that would

obviate the inherent disadvantages of orthodox prefrontal lobotomy, topectomy(5), cortical undercutting(6), thalamotomy(7), and lobectomy(8). We desired a simple operation that would be less time consuming, less costly to the patient, productive of less personality changes, and one capable of being performed by the psychiatrist himself. We therefore chose the modified technique of Fiamberti(9) and Freeman(10) known as transorbital leucotomy.

We have operated and observed 110 private patients since May 1948. Many of these patients were operated after having been previously treated intensively by psychotherapy, narcohypnosis, and the various shock methods. Two patients had had previous unsuccessful orthodox lobotomies. One had thalamotomy performed twice without relief. We have purposely not adhered to the criteria or suggestions of Freeman(10) and Kalinowsky and Scarff(11) regarding the most suitable types of patients for leucotomy, and have selected difficult cases at random in order to subject transorbital leucotomy to its severest test. As a result of our observations we believe that some of the arbitrary indications may yield to a more liberal application based on increased experience with this operative technique. Another goal has been to find a procedure, simple yet efficient, that could be used for every patient heretofore relegated to the chronic wards of state hospitals without benefit of further therapy.

Fiamberti(9) was the first to introduce frontal lobe leucotomy by the transorbital route in 1937. He believed that the results obtained by Moniz(1) by a rather formidable operation could be achieved more simply by the transorbital approach to the frontal subcortical white matter, utilizing the method previously developed by Dogliotti(12) in reaching the lateral ventricles for ventriculography. In Fiamberti's first series of 10

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chronically ill patients, he both severed the subcortical white matter in the frontal lobes and, in some cases, injected absolute alcohol or 10% formalin. He was also the first to suggest that the "neurologist" was quite capable of performing this procedure. Shortly after Fiamberti's work became known, Rizzatti and Borgarello(13) reported 100 patients treated by transorbital leucotomy, and from their results concluded that the procedure was not of great value in the treatment of schizophrenic patients of long standing. There were 2 deaths in their series presumably due to the unsuspected presence of gliomas of the frontal lobe. Interest in this method lapsed during World War II, but upon its termination Fiamberti again stimulated interest in this technique. Fernández-Morán(14) leucotomized 21 patients 25 times. In several of these patients 10% formalin or 2% novocaine was injected into the white matter, and Fernández-Morán believed that novocaine injection yielded better results in reoperated patients than division alone. There were no postoperative complications and no deaths in this series.

Transorbital leucotomy was introduced into this country by Freeman(10) in 1946 when he operated 10 patients and since that time has performed the operation in over 400 individuals. In his recently reported series of 100 patients(10c), Freeman stated that one-half of the schizophrenic and one-half of the involutional cases responded favorably. There was one cerebral hemorrhage, one temporary hemiparesis, and one patient who had occasional convulsive seizures following operation. Freeman modified Fiamberti's technique using at first an ordinary ice pick but later a more serviceable transorbital leucotome.

Haas and Williams(15) reported a small series of cases with moderately good results. Under the stimulus of Freeman, Jones and Shanklin(16) operated 41 patients in a state hospital without fatality or serious complication postoperatively. By means of transorbital leucotomy, they reported beneficial results in 80% of the cases followed longer than one month and claimed a 53% parole of patients formerly hospitalized. On the less impressive side of the ledger were the reports by Ferrero(17), and the more recent

one of Walsh(18), who stated, "In the present series of eight cases no definite clinical improvement followed transorbital leucotomy. The necropsies on the two patients who died of intercurrent disease showed that the operation had not achieved its purpose of cutting the white matter of the prefrontal areas. Though the transorbital approach to the prefrontal area is easy, the future of transorbital leucotomy depends on further modifications designed to insure the greatest possible severance of fibers in this area."

The discrepancy of results as reported by these workers may be due to differing individual techniques regarding the amount of subcortical white matter severed, the types of cases selected for operation, and the manner in appraising clinical observations. Meyer(19), in discussing the anatomical findings in the brains of patients having had various forms of psychosurgical procedures, observed that prefrontal lobotomy (both closed and open methods), thalamotomy, and transorbital leucotomy were "blind methods." He was able to show wide variation in the planes of surgical cuts in prefrontal lobotomy by both the open and closed methods. It is clear, therefore, that even in such procedures as prefrontal lobotomy and also topectomy some degree of anatomical variation may exist from case to case. The remarkable fact is that although Meyer has shown that accurate removal of specific areas of the cortex has not yet been achieved, the clinical results of topectomy, as reported by Pool(5) and the Columbia-Greystone Associates(20), are very encouraging.

#### MATERIAL

This group of 110 patients consisted of 78 females and 32 males, the youngest being 14 years of age and the oldest 70 years. A total of 127 transorbital leucotomies were done on these patients. Seventeen were reoperated, with a more extensive sectioning.

Of these 110 patients there were 2 groups of 50 and 60 each. Of the first group of 50, the operation described by Freeman in which sections were done at 4 cm. and 7 cm. alone was performed in one half, and in the remaining, sections were done at 4, 5, 6,

and 7 cm. In the second group, one-half were sectioned in this manner plus a deep mesial cut, which latter presumably severs fibers to the cingulate gyrus. The second half were sectioned at 4 and 7 cm., plus a lateral sweep that sectioned fibers to area 46 of Brodmann. Sections at 4 and 4.5 cm. presumably sever fibers to area 11, and the section at 7 cm. severs fibers to areas 9 and 10. In our final tabulations it was observed that the percentage of improved patients was practically the same in both groups, there being but an added 2% improvement

transorbital leucotomy. The schizophrenic group was divided into paranoid, catatonic, deteriorating (hebephrenic and simple), and pseudoneurotic. The number of each and percentile improvement are seen in Table 2. The group designated as psychoneuroses consisted largely of obsessive-compulsive, anxiety-tension states, and 2 patients with marked hypochondriacal components.

## RESULTS

In the evaluation of the results we have taken into consideration the varying criteria for recovery or improvement as offered by most investigators and have established for ourselves the following criteria. Our improved group consists of: (1) greatly improved (35.5%), by which is meant a satisfactory social and economic adjustment out of hospital, and (2) improved (25.5%), consisting of those who have made marginal social adjustment at home or in hospital and who do not require supervision. Patients who showed relatively little or no improvement were designated as unimproved (39.0%). None of the surviving cases was made worse.

The postoperative state in our patients has been essentially the same as that described by Freeman (10c). In many cases, particularly in agitated depressions and markedly excited schizophrenics, the beneficial results came on with startling rapidity, often noticeable within an hour or two, at most within 24 to 48 hours, following operation. The majority of patients who show improvement usually manifest it within the first week postoperatively. In the case of obsessive-compulsives improvement can be noted within the first week with respect to anxiety, which usually tends to disappear quickly; however, thereafter improvement is gradual and progressive. A small group of schizophrenics have shown a rather abrupt onset of improvement after the second, third, or fourth month postoperatively. The patients in the "greatly improved" group, which makes up 35.5% of the total, have returned to their gainful employment or in the case of housewives have resumed their normal activities. Twelve patients were subjected to Rorschach, Szondi, and Wechs-

TABLE 1

## RESULTS ACCORDING TO DIAGNOSIS

Diagnosis	Total No. cases	Improved	
		No.	%
Schizophrenia .....	74	39	53
Manic-depressive dep. ....	6	5	83
Involuntal dep. ....	8	5	63
Psychoneuroses .....	19	16	84
Paranoid psychosis .....	2	1	50
Mental deficiency with paranoia .....	1	1	100
Total .....	110	67	61

TABLE 2

## RESULTS IN SCHIZOPHRENIA

Schizophrenia	Total No. cases	Improved	
		No.	%
Paranoid .....	30	19	63
Catatonic .....	19	14	74
Hebephrenic and simple .....	23	4	17
Pseudoneurotic .....	2	2	100
Total .....	74	39	53

in the second group. The instrument employed was a transorbitome, developed by one of us (M.T.M.) (21), and the preparation of the patient, designed to prevent postoperative hemorrhage and infection, was the same as described in an earlier communication (22). The diagnoses of the cases operated and the results in each group are seen in Table 1.

In 17 patients, postoperative electric convulsive therapy was given at intervals of 1 treatment every 2 or 3 weeks for approximately 6 to 10 treatments. In these patients it was found that the effect was much more rapid and lasting than prior to

ler-Bellevue tests prior to and subsequent to operation. These consisted of 6 obsessive-compulsives, 4 manic-depressive depressed, and 2 schizophrenics. All showed preservation of their personality patterns, and in none was there any evidence of intellectual deficit. Two cases of obsessive-compulsive psychoneurosis disclosed mild facetiousness following operation. These patients previously had been taciturn. Although a number of patients seemed somewhat subdued for several days following operation, there was no evidence of blunting of emotional tone in any of them. None showed the inertia, apathy, egocentric behavior, slovenliness, blunting of the social and moral sense of responsibility so commonly encountered subsequent to prefrontal lobotomy.

Two patients with pronounced hypochondriacal preoccupations failed to respond to transorbital leucotomy. In these patients, however, there was no change of their emotional or intellectual endowments as compared with their state prior to operation. Another psychoneurotic patient who failed to improve was an obsessive-compulsive with a subnormal mentality on whom the procedure was done as a last resort. One severe obsessive-compulsive previously had been thalamotomized twice without result. She was subsequently operated by the transorbital route and showed remarkable improvement. As in the study carried out by the Columbia-Greystone Associates(20), we found that removal of anxiety, and a marked lessening of the complaint inventory, were the most significant effects. Agitation and excitement in our series were likewise greatly reduced or abolished.

In Table 1 it will be seen that the group next to the obsessive-compulsives to respond most favorably was the manic-depressive agitated depressions. In this group, and as also in the involutional depressions, patients were selected who had had frequent recurrences at shorter intervals and who had been subjected to numerous courses of shock therapy. The response in these 2 groups was often dramatically gratifying.

In the schizophrenic categories the most satisfactory results were obtained in catatonics. These were patients who had had many recurrences and some who had to be

kept on maintenance shock therapy at weekly or biweekly intervals prior to transorbital leucotomy. The number of schizophrenic—pseudoneurotic type was too small for statistical evaluation, although both of these patients improved, one considerably. Among the paranoid schizophrenics 63% improved. In most of these individuals many of the paranoid ideas persisted, but the emotional charge and behavior were significantly altered so as to eliminate excitement, aggression, and hostility, and thus enable the patient to make a satisfactory social adjustment.

### COMPLICATIONS

Three patients suffered intracerebral hemorrhage (see Table 3). Of these, 2 died

TABLE 3  
COMPLICATIONS

Complications	No. cases	Remarks
Hemorrhage . . . . .	3	One complete recovery, 2 deaths. Mortality: 1.8%.
Enuresis . . . . .	11	Complete recovery 2 days to 2½ weeks.
Meningismus . . . . .	1	One week duration.
Cerebrospinal fluid escape . . . . .	1	Ceased spontaneously third postoperative day.
Epilepsy . . . . .	1	Ceased spontaneously after second T.O.L. (100 ECT. previous to first T.O.L.)

without craniotomy, and 1 is now surviving, greatly improved, after craniotomy for evacuation of an intracerebral clot. Of the 2 fatalities one was a 38-year-old male, who had had a previous left frontal lobe softening, as later disclosed at autopsy; the other was a 24-year-old male whose brother revealed, after death, that the patient was a hemophiliac. This information had been concealed by the parents.

Our mortality rate was 1.8%. This compares favorably with other procedures, such as the 1,000 cases of prefrontal lobotomy reported by the Board of Control, England and Wales(23), in which the mortality rate was 3%. The "open" type of prefrontal lobotomy as performed by Love(24) and Poppen (3) has a fatality rate of less than 2%. Peyton, Noran, and Miller(8) have reported a 6% mortality in a series of 48 prefrontal lobectomies. Spiegel and Wycis



(25) performed 62 thalamotomies on 44 patients with a mortality rate of 3.2%. A mortality of 4.6% was encountered in a series of 43 cases of selective cortical undercutting of the frontal lobes reported by Scoville(6). Oltman *et al.*(26) reported an operative mortality of 3.7% in 107 cases of frontal lobotomy in which the Lyster technique was followed.

Enuresis was one of the milder complications, occurring in 11 patients, and clearing up in the majority of cases within 2 to 3 days. It lasted for 2½ weeks in one patient. Meningismus occurred in one case and endured for one week. One patient had a cerebrospinal fluid leak via the conjunctiva, which ceased spontaneously on the third postoperative day. Postoperative epilepsy occurred in one patient who previously had had approximately 100 electric convulsive treatments, but the convulsive manifestations ceased spontaneously after a second transorbital leucotomy was performed. An excellent psychiatric result was obtained in this case. Thus, considering this as a case of postoperative epilepsy, the incidence is under 1%. In uncomplicated prefrontal lobotomy, according to Freeman(27), postoperative convulsive seizures occur in 7%. However, in lobotomy performed following numerous electric convulsive treatments or after reoperation the percentage of postoperative convulsive seizures reaches 20%(27). Postoperative convulsive seizures occurred in 9.3% of patients subjected to cortical undercutting(6). In the 24 topectomized patients reported by the Columbia-Greystone groups (20), 16% developed postoperative convulsive seizures.

There have been no postoperative infections.

#### DISCUSSION

Because of the great number of failures in treating schizophrenia by both insulin and electric convulsive therapy other means have been sought for those cases which have proved refractory. The pioneering work of Moniz(1) was a definite advance and his method was soon modified by Freeman and Watts(2) and Lyster(28). These techniques have become standard in the treat-

ment of cases that have failed to be benefited by the less drastic therapeutic measures. The work of Fiamberti(9) was another milestone in the advance of psychosurgery, and this method also has been modified by Freeman and by ourselves.

Transorbital leucotomy is a comparatively rapid, simple procedure that can be done by a psychiatrist without elaborate equipment or facilities. It has the great advantage over the former methods of lobotomy by producing no untoward psychological effects. Thus far no disturbances in the personality or in the intellectual endowments have been encountered. The mortality is low and the morbidity minimal.

The postoperative course in our cases has been a mild one. Usually by evening of the day of operation, the patient is able to eat a hearty meal, and feels well enough to be up and about 24 to 48 hours postoperatively. The majority of our patients have been discharged 3 or 4 days after operation.

It can be stated categorically that if this procedure is ineffectual in helping the patient it will do no harm; the patient may not be improved, but he will not be made worse.

We believe that every schizophrenic patient irrespective of the length of illness who is not deteriorated and who has had the advantages of present-day accepted treatment without relief should be given the benefit of a transorbital leucotomy. The best results were obtained in those catatonic or paranoid types who were agitated or excited. Transorbital leucotomy even has improved the hallucinatory phenomena by diminishing the associated affective reaction. It thus acts in the same manner as does lobotomy in the treatment for intractable pain(29). In many of our schizophrenic patients, we have obtained only partial improvement following operation and in these we have given the patient electroconvulsive therapy semi-monthly for 6 to 10 treatments and have noted a more effective response to ECT after transorbital leucotomy than before. Patients have been rehabilitated with this procedure when the result of the transorbital leucotomy itself has been only fair.

We do not recommend transorbital leucotomy or any other operative procedure as early treatment. Transorbital leucotomy

should be used only after all other standard, less drastic methods fail. Should transorbital leucotomy, posttransorbital-leucotomy maintenance ECT, or reoperation prove unsuccessful, then the more elaborate and drastic operative procedures can still be carried out.

One of the truly resistive disorders to treatment in modern psychiatry is the obsessive-compulsive psychoneurosis. Electric shock therapy once was hailed as a therapeutic possibility, but experience has shown this to be ineffectual and often harmful. Psychoanalysis has proved of no avail in severe obsessive-compulsives and many psychoanalysts refuse these patients their services (30). More in desperation than by precedent we began to use transorbital leucotomy in these cases and were gratified to find that our results were better than with any other method heretofore tried.

In the great majority of the manic-depressive psychoses, ECT is the method of choice but in an occasional patient in whom many recurrences follow quickly at short intervals transorbital leucotomy merits application. The cogent reason in such cases is that frequently repeated ECT may initiate a convulsive syndrome, and we have used transorbital leucotomy in those patients who have had 100 or more treatments in various clinics prior to coming to our hospital. Patients with agitated depressions apparently respond better than simple depressions.

At the outset we employed transorbital leucotomy in those schizophrenic patients who were considered hopeless, thus giving this procedure its sternest test. To our surprise we obtained a sizable percentage of good results especially in patients who showed aggression, hostility, and agitation. The immediate result of the operation often was startling, the patients showing a marked change as soon as they reacted from either the electric-shock coma or intravenous sodium pentothal. We have performed the operation using both methods of producing coma. In the light of our experience we believe the operation should not be done years after the onset of a schizophrenic reaction, but should be carried out as soon as the clinician has assured himself that all other therapies have been given fair trial and

have failed. This does not eliminate cases that have been sick for years, since we have operated patients ill for 10 to 15 years and have obtained some degree of improvement, but the results in these patients are by no means as good as in the early cases, that is, within the first few years of the onset of schizophrenic symptoms.

### SUMMARY

1. A series of 110 patients on whom transorbital leucotomy was performed is reported.

2. These consisted of schizophrenia 74 cases, psychoneuroses 19 cases, affective psychoses 14 cases, paranoid psychosis 2 cases, mental deficiency with paranoia 1 case.

3. The schizophrenic group had received the present-day accepted forms of treatment without relief and were considered non-salvageable, but showed a 53% improvement rate following transorbital leucotomy.

4. Catatonic and paranoid types of schizophrenia responded most favorably in this category with a 74% and 63% improvement rate respectively, whereas the deteriorating forms showed a low improvement rate of 17%. If agitation was a significant feature of the deteriorated type, improvement was obtained after transorbital leucotomy.

5. Among the obsessive-compulsive patients, previously subjected to psychotherapeutic techniques, ECT, etc., transorbital leucotomy effected an improvement in 84%. Improvement was slow initially but showed increasing momentum with the passage of time.

6. Psychoneurotics with pronounced hypochondriacal preoccupations are not favorably influenced by transorbital leucotomy.

7. The affective psychoses, wherein repeated courses of shock therapy have failed to prevent frequent recurrences, particularly agitated depressions, respond very favorably to transorbital leucotomy, an improvement rate of 83% appearing in the manic-depressives, and 63% in the involutional depressions.

8. In view of the relative ease of performance, short hospitalization, minimal nursing care, insignificant morbidity, low mortality compared with other psychosurgical proce-

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dures, and the favorable results, the authors suggest that this procedure be utilized more widely in suitable cases before relegating them to custodial institutions for life, or permitting them to lead a burdensome existence.

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# IMPAIRED CEREBRAL FUNCTIONS IN ESSENTIAL HYPERTENSION<sup>1</sup>

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Symptoms attributable to dysfunction of the central nervous system are common in patients with essential hypertension. The cerebral complications that occur in the course of the disease can be separated into 4 graded phases. Even before permanent hypertension becomes established, alterations in the cerebral vascular mechanisms are held responsible for such complaints as headache, tinnitus, dizziness, irritability, fatigue, and weakness. Increased pressure within the cerebral capillaries with edema of the brain or local arteriospasm with ischemia of the adjacent portion are thought to account for acute hypertensive encephalopathy(1), a complication associated with fixed hypertension. In a later phase, diffuse, chronic, and acute lesions of encephalomalacia are regarded as manifestations of chronic hypertensive encephalopathy(2). The terminal phase is massive brain damage in consequence of cerebral hemorrhage or thrombosis, or acute softening due to failure of the intra- or extracerebral circulation.

More than a century ago Rouchoux(3) observed that "cerebral, hemorrhagic apoplexy is preceded by a gradual and clinically unrecognized alteration of brain substance, resulting in reduction of its cohesive properties." This view was shared by Durand-Fardel(4) who described the pre-apoplectic phase as one of "interstitial atrophy of the brain." In 1926, Westphal and Baer(5) recognized that impairment of cerebral functions could take place "without discernible alterations in the brain." They suggested that recurrent angiospastic episodes eventually lead to cerebral softening and disorgan-

ization. A year later Globus(6) remarked that "evidence of pre-existing cerebral lesions would have been found" if neurologists had the opportunity to study patients prior to the acute onset of cerebral hemorrhage. Scheinker's(7) recent contributions to the neuropathology of cerebral hypertensive disease have directed attention to changes in the vasomotricity of the cerebral vessels. The smaller veins are especially vulnerable since they cannot compensate as easily as the arterioles to increased pressure. Aring(8) has presented impressive experimental and clinical data to support a concept of vascular disease of the brain based on the dynamic changes occurring in the cerebral blood vessels and concomitant disorders of the cardiovascular apparatus. Kety and Schmidt(9) have demonstrated slight reduction of the average cerebral blood flow and oxygen consumption as well as an increase in cerebral vascular resistance in hypertensives.

These considerations and psychiatric observations that alterations in neurotic defenses occurred, in some patients, following transient neurological signs led to this investigation. We studied the effects of relatively early and minimal cerebral damage on the personality patterns and adaptive capacities of patients with essential hypertension. The method of study, which combined medical, neurological, experimental psychological and psychiatric techniques, has been described elsewhere (10,11). Data on 14 patients are provided in Table 1.

The following summaries are designed to illustrate how major personality changes correlate with neurological or experimental psychological examinations:

**SUMMARY 1.**—Patient IJ, a 41-year-old supervisor of mechanics, developed a transient right hemiparesis and aphasia in October, 1946. He returned to work on the following day. For the 2 months that followed, he noticed a diminution in his energy output, easy fatigability, and periods of insomnia. Immediately after the onset of his dif-

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faculties he noticed that, when he started to criticize one of his foremen, his heart would beat fast and he would become speechless. He soon learned to instruct his subordinates more gently. He became less perfectionistic and demanding of himself. His aggressivity diminished simultaneously with the development of a more tolerant attitude toward his men. His impairment index on the battery of neuropsychological tests designed to evaluate frontal lobe functions was 0.4, a finding that is not, at present, interpreted as evidence of damage to the prefrontal lobes. The only neurological residua discernible in March, 1947, were hyperactive reflexes and facial asymmetry.

*Comment.*—This patient developed a small cerebral vascular lesion early in the course of essential hypertension. Immediately following this complication, which did not deter him from returning to work, a recognizable change in personality occurred. The relatively low impairment index in the presence of a known cerebral lesion is interpreted to indicate that damage to the frontal lobes had not taken place. The fact that this patient was able to adjust to his work and the limitations of a cerebral insult is testimony to the integrative strength of his ego functions, an opinion that is borne out by his past history.

**SUMMARY 2.**—Patient HI, a 39-year-old maintenance worker, developed acute anxiety symptoms, insomnia, and loss of energy in 1944. On two occasions, syncope followed an anxiety attack. These difficulties persisted for 1½ years. He came to the University of Chicago Clinics in 1946. Whereas previously he had been exceedingly conscientious and became easily angered when anything interfered with accomplishing a given task, he observed that interruptions and obstacles to his work no longer provoked him to rage. Since the onset of his difficulties he had become more amenable to suggestions. He readily accepted the need for psychiatric evaluation. There has been no apparent deterioration of his manual skills. The anxiety symptoms have not recurred. His impairment index was 0.7, a value interpreted as indicative of diffuse damage to the prefrontal lobes.

*Comment.*—The patient had not reacted with acute anxiety prior to diffuse cerebral involvement. The appearance of anxiety in its overt form is interpreted as a reaction to the cerebral defect. Despite the absence of neurological signs, the stress was sufficiently severe to require 18 months for ego-integrating experiences to allay the reaction. Willingness to express and accept dependent needs characterized the readjustment process.

**SUMMARY 3.**—Patient NO, a 58-year-old executive, entered into psychiatric treatment willingly although his wife and the referring physician were somewhat reluctant to suggest it for fear that he would reject the plan. For 3 months prior to hospitalization he had been drinking himself into states of unconsciousness one or two evenings each week. The amount of alcohol he was taking had not increased appreciably but his tolerance had decreased. He had recently turned down an executive position that would have paid him four times as much as the one he now holds. He recognized a number of changes in his reactions that had occurred during the past few months. He was much more tolerant of his subordinates, he no longer took papers from his office to complete unfinished work at home; he refused to be rushed into giving immediate opinions; he began to leave his desk in mid-afternoon so that he could spend some hours during the day in relaxation; and he seemed to be content to sit in his easy-chair at night and "let the rest of the world go by." In spite of excellent performances on the nondiscriminatory tests in the psychological laboratory, he failed to achieve criterion scores on 8 of the discriminatory tests for frontal lobe dysfunction. This score is comparable to damage seen in patients with bilateral prefrontal lobectomy.

*Comment.*—The ego defenses of an exacting, ambitious, and driving executive were altered in the direction of passivity following impairment of cerebral functions. Associated with the characterological changes were mild memory and judgmental defects. He protected himself against anxieties associated with the assumption of new duties by rejecting an offer of a position that would have added considerably to his income and prestige.

**SUMMARY 4.**—Patient KL, a twice-divorced 39-year-old unemployed research worker, had been in charge of a large group of investigators, a position for which he was inadequately trained and which he obtained during the critical manpower shortage. He carried out his responsibilities until the spring of 1948. At that time he noticed that he was less able to evaluate the many reports that passed over his desk. Although he had not been accustomed to take notes, he found himself writing many reminders and advised his secretary to call appointments to his attention. He was unable to fall asleep at night and started to take larger amounts of alcohol, but soon found that his tolerance to liquor had decreased. Although he had always reacted with a superior attitude, he never openly criticized his supervisors until the onset of his present difficulties. He then became easily irritated and was soon eased out of his job. He appeared at the University of Chicago Clinics for medical evaluation and cooperated in the various clinical and laboratory examinations in the outpatient department. He arranged for hospital admission. When he was in-

formed that a bed was available, he contracted to take it but did not reappear at the appointed time. He failed to achieve criterion scores on 5 of the 10 discriminating tests for frontal lobe damage in spite of better than average performance on the nondiscriminating tests.

*Comment.*—This patient had been able to perform highly skilled work previous to

work. Even though this man's impairment index is borderline, he was unable to continue highly skilled work. Premorbid personality difficulties in his personality make the prognosis poor even though the extent of brain involvement is not as severe as in the last two patients described.

TABLE 1

Patient symbol	Sex	Age	Marital status	Date first examined AMBH	Weight (kilos)	Height (cm.)	Presenting complaints	Blood pressure range	Duration of high blood pressure (yrs)	Heart size	ECG studies	Urinalysis	Urea clearance
AB	F	48	M	10/16/46	87	167	Palpitation, high B.P., fatigue	$\frac{180-230}{108-130}$	15	Normal	L.A.D.	Neg.	70% N.
BC	M	42	D-M	8/26/46	73	180	Dyspnea, palpitation, hdak.	$\frac{155-200}{105-140}$	6	15% over	Borderline abn.	Neg.	90% N.
CD	M	51	M	12/10/41	91	173	Vertigo, back pain	$\frac{184-212}{113-130}$	5	Normal	L.V.S.	Neg.	100% N.
DE	M	48	M	1/17/48	86	182	High B.P.	$\frac{154-200}{98-116}$	3	Normal	No abn.	Neg.	100% N.
FG	F	27	S	9/10/47	50	152	High B.P.	$\frac{170-200}{120-150}$	6	35% over	No abn.	Neg.	66% N.
HI	M	39	M	2/20/46	86	167	Hdak, high B.P.	$\frac{144-190}{98-130}$	12	33% over	No abn.	Tr. alb.	90% N.
IJ	M	41	M	2/28/47	84	171	High B.P., history of rt. sided wkness	$\frac{116-142}{70-103}$	1	Normal	Ess. norm., L.A.D.	Neg.	N.
JK	M	38	D	4/20/48	86	175	C.V.A., rt. hemiparesis	$\frac{140-184}{80-135}$	7	Normal	L.V.H. with additional abn.	Occ. w.b.c.	135% N.
KL	M	39	D (2x)	11/12/48	93	184	High B.P., dizziness, tinnitus	$\frac{160-184}{110}$	6	Normal	Suggestive L.V.H.	Tr. alb.	100% N.
LM	F	29	S	10/31/48	48	157	Palpitation	$\frac{120-180}{60-110}$	7/12	Normal	Normal	Neg.	100% N.
NO	M	58	M	11/26/46	77	164	High B.P., hdak, lack of pep	$\frac{150-230}{100-150}$	4	20% over	Myocardial abn., L.V.H.	Few r.b.c.	119% N.
OP	M	42	M	2/28/47	86	171	Lightheadedness	$\frac{150-220}{94-140}$	6	3% over	Normal	Neg.	100% N.
PQ	M	48	M	12/5/47	66	163	Fatigue, hdak	$\frac{175-190}{98-135}$	1½	28% over	Normal	Tr. alb.	75% N.
QR	F	34	M	9/3/47	78	160	Dizziness, palpitation, choking sensation	$\frac{205-270}{130-145}$	9	23% over	L.V.H.	Neg.	95% N.

the onset of his current difficulties. Inability to check hostile and resentful attitudes toward authoritative figures was accompanied by defects in memory and judgment. These changes in personality patterns, as well as decreased efficiency in his work, became apparent to his superiors. He is currently drifting from job to job without showing any indications that he will stay at one type of

## DISCUSSION

Binger *et al.*(12) have summarized the nature of the emotional conflicts in patients with essential hypertension. They have described "the failure of integrative functions of the personality" and "the temporary disorganization" that coincides "in time with the discovery of hypertension." In established hypertensive disease, however, other

alterations in the adaptive capacities occur when impairment of cerebral functions supervenes. In this study, clinical observations of changes in the personality defenses were correlated with experimental psychological examinations evaluating biological intelligence (see Table 1).

attempts to suppress feelings of hostility and resentment were encountered in those whose premorbid personalities were relatively stable as reflected in enduring family relations, good occupational history, and freedom from dependence on food and alcohol. On the other hand, in less stable individuals (Patient

TABLE 1 (Continued)

	Ophthalmological studies	Associated medical diseases	Neurological signs and symptoms	Impairment index	Psychiatric diagnosis	Comment and follow-up	
70% N.	Old hemorrhages, A-V nicking, partial obl. of disc	None	None	.6	Character neurosis	Overt neurotic reaction ff. onset of cerebral impairment.	AB
90% N.	A-V comp.	Frequent U.R.I.	None	.5	Character neurosis	Died suddenly in 1947.	BC
100% N.	A-V comp.	Old peptic ulcer	Occ. diplopia	.6	None made	Reactivation of peptic ulcer, died of cerebral hemorrhage in 1948.	CD
100% N.	Pericapillary edema	None	None	.3	Inhibited character	Improved following superficial psychotherapy.	DE
66% N.	Light-reflex increased	None	None	.6	Hysterical character	Sympathectomy did not relieve difficulties; biopsy-nephrosclerosis	FG
90% N.	Minimal sheathing of arterioles	None	Blurring of vision	.7	Anxiety state, improved	Follow-up care with no revival of symptoms.	HI
N.	A-V nicking	Chr. prostatitis	Hyperactive deep reflexes on rt., tinnitus, transient hemiparesis	.4	Obsessional character	No limitations of activities.	IJ
35% N.	Bilat. papilledema, A-V comp., arteriolar narrowing	None	Rt. hemiparesis	.7	Character neurosis	Thalamic pain persists; aphasic difficulties improved; unable to return to work.	JK
100% N.	Minimal A-V nicking, discs not clear	Meniere's syndrome (1945)	None	.5	Character neurosis	Unemployed.	KL
100% N.	Normal	None	None	.6	Anxiety neurosis	Immature, inhibited, chronically anxious.	LM
19% N.	Mod. A-V nicking	None	None	.6	Recurrent alcoholic episodes	Working at executive position, some limitations of intellectual abilities.	NO
100% N.	Increased light reflex	None	None	.3	Obsessional character	Unable to engage in psychotherapeutic relationship. Recurrent depressive reactions.	OP
75% N.	Minimal A-V comp.	Chr. bronchitis	None	.6	Chronic alcoholism	Relinquished executive duties following inability to make precise financial judgments.	PQ
95% N.	Increased light reflex	Atypical coronary (?)	None	.6	Hysterical character	Anxiety symptoms became evident at time of cerebral impairment.	QR

Patients with deterioration of biological intelligence revealed characteristic changes in their adaptive functions. Impairment of cerebral functions was attended by anxiety symptoms not explainable by changes in the cardiovascular apparatus, insomnia, loss of energy, and mild memory and judgmental defects. Personality defenses against feelings of dependency were replaced by acceptance of these needs. More conscious

KL), mild impairment of cerebral functions released hostile impulses that were previously suppressed. All the patients with measurable impairment of biological intelligence relinquished their perfectionistic strivings in a relatively short time.

These findings as well as the neuropathological, biochemical, and experimental data referred to previously reveal that organic brain damage may occur in essential hyper-

tension before neurological signs appear. In some instances, the damage does not progress for some time. In others (Patients BC and CD), it marks the beginning of a subacute process that soon leads to generalized cerebral involvement, easily recognizable neurological disorders, and death.

From the standpoint of ego psychology, the following series of events is conceptualized to help bring together clinical observations and theoretical considerations:

1. In the premorbid personality the ego functions (internal and external perception, integration, and execution(13)) are not encumbered by effects of cerebral impairment;

2. The personality reacts with acute symptoms of anxiety to organic damage when the basic sensory equipment, integrating mechanisms, and motor control are involved—the ego functions are impoverished by virtue of impaired cerebral functions;

3. Adjustment to the newly acquired cerebral defects begins—initial defense mechanisms such as withdrawal, rationalization, and identification are invoked(14);

4. Willingness to accept dependent needs without stubbornness becomes evident—the primary defenses of the premorbid personality are relinquished; and

5. Alterations in neurotic patterns and adaptive mechanisms appear—such defensive measures as denial, regression, reaction formation, guilt, projection, and substitution have served reintegrating functions so that the ego appears reconstituted.

While this order of events is conceptualized for cerebral damage occurring in the course of essential hypertension, it is obviously not specific for this disease. Other affections of the central nervous system as well as of other organ systems provoke similar reactions. Just as moderate cerebral involvement produced a picture of apparent health in some of these patients, so also can an intercurrent illness temporarily relieve a severe emotional conflict.

### CONCLUSIONS

1. The cerebral course of essential hypertension is reviewed.

2. The psychiatric syndrome, characterized by changes in personality patterns, es-

pecially in relation to the expression of hostility, the willingness to yield to dependent needs, and reduction in perfectionistic drives, associated with mild judgmental and memory defects, insomnia, loss of energy, and anxiety symptoms that are not explainable by changes in the cardiovascular status, has been isolated by the combined techniques of the internist, psychiatrist, neurologist, and experimental psychologist. The appearance of this syndrome signifies the onset of organic involvement of the brain. The duration of the syndrome depends not so much upon the quantitative aspects of the cerebral damage as upon the integrative ability of the premorbid personality.

3. Impairment of cerebral functions equivalent to that seen in patients with surgical removal of both frontal lobes may occur early in the course of essential hypertension without neurological signs. Although the critical experimental psychological tests used in this study measure functions of the prefrontal lobes, we do not presume that brain damage is confined to this area. On the contrary, neuropathological evidence points to diffuse involvement of the nervous system.

4. The syndrome described that accompanies the onset of brain disease provides further information regarding the clinical course of hypertension. This study does not provide information relative to its incidence nor the factors that promote or retard its appearance.

5. The mechanisms by which cerebral damage herein described occurs require further elaboration. The discrepancy frequently encountered between disturbances and adaptive capacities and the absence of neurological signs invokes a concept of neuropathology that considers alterations in vasomotricity and subtle biochemical changes.

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## ELECTRONARCOSIS IN A GENERAL HOSPITAL<sup>1</sup>

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This is a report of 110 patients treated for psychiatric disorders predominantly by electronarcosis at the University Hospital by the Department of Psychiatry and Neurology at the Medical College of Georgia between January 1948 and July 1949.

Previous reports of clinical results in electronarcosis have been made by Frostig *et al.* (1), Tietz (2), Paterson *et al.* (3), Germany (4), Bowman (5), and Goldman (6).

Our series consists entirely of psychiatric patients in a general hospital. This factor is important because general hospital psychiatric patients are usually seen much earlier in their illness than the institutionalized patient. There are several disadvantages to treating psychiatric patients in a general hospital. Since our patients are not committed by law the treatment is frequently interrupted by the patient's insistence upon leaving the hospital against medical advice. Sometimes it is difficult to persuade the families to leave the patient in the hospital for further treatment when marked improvement is apparent even to the layman. High costs of hospital care and the considerable distances that the patient must travel for outpatient treatment are probably reflected in the fairly short courses of electronarcosis in this series. We heartily endorse extensive treatment in any procedure, but under our peculiar conditions this is not always obtainable to ultimate desideratum.

In an attempt to give a fair and accurate report of the efficiency of electronarcosis treatment 26 patients were not included in the series for the following reasons: 14 patients left the hospital against medical advice; 7 were inaccessible for adequate follow-up examination; 1 received more concomitant electroshock than electronarcosis; 2 discontinued because of cardiac complications; 1 died of

intercurrent illness; and 1 developed meningococcal meningitis.

In our early experience with electronarcosis there were 3 criteria that we felt indicated this treatment:

1. Patients whose disorders had failed to respond to adequate treatment by electroshock, insulin coma, subcoma insulin treatments, and/or intensive psychotherapy.

2. Those disorders that ordinarily bear a rather grave prognosis, irrespective of type of treatment. In our series there were obsessive-compulsive ruminative tension states, sometimes classified "psychasthenia"; the anxiety-depressive states with somatization, sometimes called "neurasthenia"; schizophrenia of 2 years' duration; schizoid personalities; and psychopathic personalities.

3. Patients with certain physical complications that were felt to be beyond the ordinary risk of relative safety with electroshock.

The criteria of treatment, therefore, act somewhat as an effective screening of the individual cases that might have responded adequately to other forms of therapy or developed spontaneous remission.

In 36 cases indications were found for concomitant electroshock.

### TECHNIQUE OF TREATMENT

The technique is essentially that used by Dr. Esther Bogen Tietz (2) and Dr. Douglas Goldman (6) with 3 minor deviations:

1. Placement of electrodes by carefully measured marks was discarded early in the series as a time-consuming and unnecessary process. Electrodes are shifted in subsequent treatments as required by the physiologic responses.

2. Each treatment is preceded by intramuscular injection of 1/150 gr. atropine sulfate, which we found to minimize the vagotonic effects (significantly laryngospasm) of I.V. pentothal, prevents vagal impendence or cardiac arrest, diminishes salivary secretions, and decreases the possibility of aspiration pneumonitis, etc.

<sup>1</sup> Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1951.

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3. The use of carbogen has been replaced by commercial  $O_2$  because  $O_2$  is cheaper and the amount  $CO_2$  that collects in a closed system is adequate to combat respiratory depression. Suboxygenation, though avoided insofar as possible, often occurs. It seems obvious that  $CO_2$  (accumulation) is greater in electronarcosis than under normal conditions.

In general it was found that after the first 5 minutes of treatment the current could be continued almost indefinitely. We found several patients to be uniformly restless, difficult to maintain, and often requiring increases of more than the usual 5 milliamperes per 15 seconds. This reaction occurred most often in psychopathic personality, obsessive-compulsive ruminative tension states, and the primarily paranoid disorders and those with strong paranoid coloring. We are not prepared to explain this satisfactorily, but it raises the question of psychic resistance translated into physiologic resistance, perhaps something similar to what causes elated manic psychotics not to develop the usual degree of confusion after electroshock.

An initial convulsion at the end of 25 seconds of induction current is considered by Bowman(5), to be therapeutically necessary in any treatment process of this sort. In certain individualized complications it was thought advisable to avoid the convulsion altogether if possible by reducing the induction current gradually over a period of 5 to 15 seconds. This technique made mechanical treatment available to several patients who would ordinarily have been considered physically unfit for electroshock. The most outstanding patient in this category was the 20-year-old woman who had suffered with osteoarthritis for 13 years. In addition to the severe arthritic condition there were congenital defects of the carpal bones, tarsals, and palate. The venous system was delicate and made for hazardous curarization. She was brought to the hospital on a stretcher, deep in catatonic stupor, rapidly developing a state of physical debilitation. Electronarcosis produced a total recovery with no complications after 15 treatments.

We encountered but one secondary convulsion following an electronarcosis treat-

ment. The history indicated no evidence of convulsive disorder; physical examination was normal and there was no sequelae to secondary convulsion. This patient completed a series of 18 electronarcosis treatments.

Although no objective data were compiled to compare the violence of the convulsions of electronarcosis and electroshock, every physician who witnessed the treatments was strongly convinced that the convulsion of electronarcosis was not as vigorous as the convulsion of electroshock. We found this fact reflected more objectively in that not one of the 110 patients offered resistance in any degree to taking the treatments.

The usual postshock confusion in electroshock was not found with electronarcosis. Even less confusion was seen than is noted with B.S.T. technique. Besides the favor this comparative lack of confusion found with the relatives, it also made possible more outside privileges and aided evaluation of mental status during treatment.

#### COMPLICATIONS

A. *Laryngospasm*.—In 5 treatments vagotonic laryngospasm was encountered during the rapid administration of 0.25 gm. sodium pentothal I.V. This was due to the vagotonic effect of the short-acting barbiturate. Treatment was 1/150 gr. I.V. atropine sulfate in 5 cc sterile water. Since use of routine intramuscular 1/150 gr. atropine sulfate premedication this has not occurred.

B. *Cyanosis*.—In 21 treatments cyanosis was present to a degree necessitating immediate relief. Cyanosis is a serious symptom and calls for action; it may signal, for example, acute right-sided cardiac failure. Usually obstruction of respiratory air passage or oversedation proved to be the cause of cyanosis.

One patient bit a worn airway in half. This was discovered when cause for his cyanosis was sought. This difficulty has not recurred since the wedge-shaped rubber bar has been placed routinely between molars before induction.

Once the cyanosis is ameliorated and satisfactorily explained on a remediable basis, re-induction and treatment are indicated.

*C. Cardiac.*—Grossly arrhythmic heart sounds and pulse beats were considered an indication for immediate termination of treatment and investigation. All attempts at ECG recording of cardiac activity during treatment have been unsuccessful. There is still need for more complete understanding of circulatory physiology in electronarcosis.

One patient developed bigeminal pulse during the treatment, but intercurrent ECGs indicated no basic disturbance of rhythm so that a normal course of treatment was completed on recommendation of the cardiology consultant.

A 43-year-old truck driver was examined for the first time at the University Hospital March 17, 1948. Diagnosis of postalcoholic paranoid psychosis was given after paresis was ruled out. In March 1948 patient began electronarcosis. On the 3d treatment cyanosis was noted at 4 minutes. The chest became wet and coarse rales were audible to the unaided ear. Treatment was immediately discontinued. The pink, frothy sputum that had begun to collect in the suction jar had now become a freely bubbling gush. The cyanosis had become a cold, dusky purple color over the entire body. Emergency treatment consisted of elevation of the head and chest, tourniquets to each extremity, continuous oxygen and intravenous Cedilantid, while 500 cc of venous blood was withdrawn. The patient coughed and wheezed. Consciousness was regained some 3 minutes after termination of the treatment. On awaking he showed both consternation and abusiveness for his strange predicament. He declared to his wife that he would not remain in the hospital because the doctor and the house physician were "trying to kill me." (That afternoon his wife at first accepted the entire account as being delusional until the physician explained that the patient had suffered an acute right-sided heart failure with pulmonary edema.) We were unable to get a follow-up examination on this patient. Our colleagues, however, have informed us that he made no improvement and was committed to a state institution 3 months after leaving the University Hospital.

The cardiac consultant expressed the opinion that the pulmonary edema was probably caused by an acute congestive failure predisposed by hypertensive cardiovascular disease. All of us regard this as one of our more serious complications.

The other serious cardiac complication occurred in a 55-year-old woman who had suffered with an almost totally disabling psychoneurotic reaction with anxiety, depression, and anancastic features of some 10 years' duration. This patient had received 6 electroshock treatments in 1943, 14 electroshock

treatments in 1946, and 7 electroshock treatments in July of 1948 with temporary benefit. On February 26, 1949, following the second electronarcosis treatment, cyanosis and tachycardia were noted. The cardiac consultant felt at first that coronary occlusion with cardiac infarction had occurred. Death seemed imminent for several days. Final results of complete cardiac study and ECGs indicated temporary coronary insufficiency with severe congestive heart failure, probably predisposed by influenzal myocarditis some weeks after a virus upper respiratory infection.

*D. Sore Throat.*—Pharyngeal submucosal hemorrhages occurred fairly frequently in the early weeks of our series. This often caused sore throat and produced pink-tinged salivary secretion during treatment. When it was recognized that suction from the aspirating catheter impinging on the pharyngeal wall caused the hemorrhages, careful attention to suction alleviated this complication. Sore throat, or any other physical complaint, warrants suspicion and examination, as will be demonstrated in the following case, which exemplifies the importance of investigating apparently minor complaints.

A 38-year-old housewife had suffered severe, unremitting headaches for 16 months. Numerous medical examinations and voluminous laboratory studies revealed no pathologic basis for her complaint. She was seen at the University Hospital in June 1948 where it was found that she had lost interest in her previously absorbing activities, and was in an extremely anxious state. It was felt that the patient was suffering an affective equivalent and the diagnosis of anxiety state with depression and somatization was made. Medical clearance was secured and electronarcosis begun in March 1949. After the 5th treatment the patient complained of sore throat. Examination revealed a mild pharyngitis with some coryza. Treatment was suspended with tentative diagnosis of upper respiratory infection. On the following day a fine macular skin rash was present, temperature was 102°; but the patient complained only of her ever-aching head. Spinal fluid examination revealed 3,000 cells and patient was removed to the contagious pavilion, where typical meningococcal meningitis developed. This intercurrent infection ran its course in 3 weeks, leaving the patient completely asymptomatic. There had occurred a miraculous transformation in her outlook. She spent much time beautifying herself, had gained weight, and assumed a light-hearted air of *sans souci*. Dismissed from the hospital with no further psychiatric treatment, she has enjoyed a rather enviable adjustment for almost a year.

*E. Dental.*—Two patients had teeth loosened by biting on the rubber airway, during



initial tonic spasm. One of these was so severe that dental extraction was necessary.

*F. Burns.*—There were several thermal burns of the skin at the site of electrode application that were thought to be due to electrical sparking across an imperfect skin-electrode contact. None of these was serious. This has not recurred since the routine use of gauze-wrapped, saline-soaked electrodes.

*G. Orthopaedic.*—There were no orthopaedic complications in this series of 110 cases treated by electronarcosis.

The one patient who died of intercurrent illness while hospitalized for electronarcosis may or may not be properly considered as a complication of electronarcosis.

This 42-year-old man was referred because of despondency, confusion, and the seemingly absurd delusion of impending demise, which preoccupied his thinking to the exclusion of all his duties and routines of daily living. For 6 weeks before admission the patient had become more detached and withdrawn. He spent much time peering intently into mirrors when he thought he was unobserved. Later he removed portraits from the wall and rehung them backside forward. He developed paranoid trends that lacked organization and detail. His despondency and self-deprecation became incapacitating, necessitating immediate psychiatric attention.

There was a history of an adequately treated primary syphilitic infection in 1928. Repeated examinations of spinal fluid and blood Kahn tests at the beginning of the patient's personality disorder were normal. Additional history indicated that the patient was treated in 1933 for pulmonary tuberculosis by left phrenectomy and prolonged bed rest. Chest X-rays had revealed no activity for many years.

Physical, neurological, and laboratory examinations August 23, including CSF and ECG, revealed no evidence of active physical disease. Considering the history of previous pulmonary tuberculosis, electronarcosis was administered on the assumption that it would be less traumatic than ECT. August 28, 24 hours after the second treatment, patient developed a flushed face, expiratory grunt, and temperature of 102° F. There was a mild pharyngitis but otherwise no physical abnormality. Temperature reached 104° F. by the following night. Chest X-ray August 30 showed no evidence of active tuberculosis. On August 31 the patient was frankly delirious. Acute urinary retention developed. The only significant change in laboratory findings was of 44 white cells, predominantly lymphs, in spinal fluid. Pellicle formation was absent.

The patient's physical condition deteriorated rapidly over the next 3 days, to terminate in death September 3. Autopsy was not obtained and the exact cause of death is unknown.

## RESULTS

Table 1 indicates immediate improvement and follow-up improvement, according to the various diagnostic categories.

The degree of improvement was fairly equitably distributed from mild to marked. This, of course, does not necessarily indicate that the same results would occur in a statistical series of 1,000 cases or more. The discrepancy between immediate improvement and follow-up improvement invites attention: 14 cases developed some exacerbation or new

TABLE 1  
RESULTS

Type of disorder	Total No. treated	Immediate improvement	Follow-up improvement
Psychoneurotic .....	28	20	18
Schizophrenia .....	36	25	17
Manic depressive .....	4	4	2
Involuntary psychosis ...	8	6	5
Paranoia .....	1	0	0
Psychopathic personality..	5	1	1
Schizoid personality .....	2	2	1
	84	58	44

TABLE 2

### AGE DISTRIBUTION AND IMPROVEMENT

Age	No. cases	Improved	Unimproved
15-20 .....	6	3	3
20-30 .....	30	17	13
30-40 .....	25	13	12
40-50 .....	11	5	6
50-60 .....	7	4	3
60-67 .....	5	2	3
	84	44	40

disorder over a period of 18 months after treatment.

Improvement was no more pronounced in one sex than the other. Of the 54 female patients treated 31 improved, 23 showed no improvement; of 30 males who received treatment, 15 improved and 15 showed no improvement.

In each age group there were about as many improved as unimproved.

Examination of duration of disorder revealed 3 rather distinct groups of improvement following electronarcosis treatment. The first group, disorders of 1 week to 2 years' duration, totaled 30 patients; 22 of

these improved and 8 were unimproved. This is a ratio of slightly less than 3 to 1.

The second clearly defined group included disorders of 2 to 11 years' duration. Of the 44 patients in this group 22 were improved and 22 unimproved.

The third and last group consisted of 10 patients who had disorders of 11 to 20 years' duration. No improvements were effected in this group.

Previous treatment *per se* apparently did not influence the likelihood of improvement in this series. It has already been mentioned that previous unsuccessful treatment was one of the criteria for using electronarcosis.

TABLE 3

CORRELATION OF DURATION OF DISORDER WITH ELECTRONARCOSIS TREATMENT

Duration of disorder	Total No.	No. improved	Unimproved
1 week to 2 years.....	30	22	8
2 years to 11 years.....	44	22	22
11 years to 20 years.....	10	0	10
	84	44	40

TABLE 4

RELATION OF PREVIOUS TREATMENT TO RESULTS

Previous treatment	Total No.	No. improved	Unimproved
None .....	38	19	19
ECT, metrazol, insulin...	46	26	20
	84	45	39

Eighteen psychoneurotic patients have maintained satisfactory improvement. The neuroses that responded best to electronarcosis therapy were anxiety reactions, certain neurasthenic disorders, neurotic depressions, and the mixed psychoneuroses.

The anxiety psychoneuroses improved in 5 of 7 cases. The improved anxiety neuroses averaged 18 months' duration. None of the 5 improved patients varied significantly from the age of 30 years. The 2 unimproved anxiety neuroses were 33 and 67 years of age respectively, so that age is probably not significant. The duration of the illness, on the other hand, is clearly contrasted with the improved cases, in that they had disorders of 4 and 12 years' duration respectively. It is interesting to note that in this diagnostic category the unimproved patients received

much more treatment than the improved patients.

Hysteria was treated by electronarcosis in only one instance. This disorder, of 2 years' duration, improved. One case, however, does not afford significant data from which to make deductions. Neurasthenia improved in half of the 6 cases. The obsessive-compulsive ruminative tension states responded with only mild or moderate improvement in 3 of the 5 patients treated. The 3 neurotic depressions responded to electronarcosis uniformly with sustained improvement after psychotherapeutic failures. The mixed psychoneuroses did well after electronarcosis in each of the 3 cases treated.

The schizophrenic group, as a whole, responded well considering that in practically every instance a full series of insulin shock and electroshock had been ineffectual. There were 12 spectacular recoveries of the 17 total improvements.

One of these was a 24-year-old woman suffering with an acute postpartum schizophrenic episode. She was seen by a psychiatrist who immediately instituted electroshock. After 11 treatments the patient seemed little improved, was irrational, deluded, hallucinatory, and disturbed to the extent that she required constant supervision. Further treatment with insulin-coma did not change her condition measurably. Electronarcosis was instituted in spite of the general feeling that her prognosis was poor. It was with gratifying surprise that we found this patient suddenly clear and rational after the 5th electronarcosis treatment. She completed a series of 17 electronarcosis treatments, in February 1949. The patient has since proved effectively recovered. She is asymptomatic and carries out her routines with no complaints. Among other things she has become interested in psychiatric disorders and has read many fairly technical articles on general psychiatry. In recent correspondence her husband states, "... I can report that the treatment given her has also helped in numerous other ways. Her nerves are very good, 100% better than before her sickness. She is hearty and in all respects seems to get more enjoyment from life and everyday surroundings."

Manic-depressive psychoses were treated with electronarcosis in 4 patients who had proved particularly refractory or did not maintain improvement after electroshock. Two of the elated subjects made sustained recovery, whereas one of the elated and one of the depressed failed to respond. This small number does not lend itself to interpretation.

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Eight involutional psychoses were treated with electronarcosis. Of the 5 improvements, there were 2 particularly gratifying recoveries. One paranoid psychosis of 3 years' duration did not respond to 19 electronarcosis treatments. Five psychopathic personalities were treated. Although prognosis for psychopathic personality is usually poor, this refractory disorder did respond satisfactorily to electronarcosis in one instance after notable failure by every other treatment, including psychotherapy and electroshock.

This case was that of a 21-year-old man with severe symptoms of poor adjustment for 8 years. His father had sought treatment for him under several well-qualified psychiatrists. He had received electroshock with little noticeable effect about 1 year before admission to the University Hospital. The history of his behavior between hospitalizations is replete with ribaldry and purposeless, even damaging, escapades. Characteristically his father, a man of wealth and influence, always intervened before serious harm could come to his son. Almost a year after dismissal this man has continued to conform to the conventions of acceptable behavior. He is now employed as trust officer in a small bank.

Schizoid personality was treated in 2 cases by electronarcosis; one improved and one did not.

#### SUMMARY

This series of 110 patients represents a fairly unusual collection of patients from several considerations. They are largely patients in whom previous forms of therapy have not been effective and who have not developed spontaneous remission. It was our feeling that any improvement gained through electronarcosis therapy represented a hitherto unrealized salvage of mental health and probably a preventive of many patient-days of chronic illness. Although this is a small series that will not bear statistical analysis adequately, we feel that the results justify, and in some cases require, the use of electronarcosis treatment in the mechanical treatment of psychiatrically ill people. From our data we believe that patients with anxiety neuroses of 18 months' duration, under 30 years of age, who have not responded to other forms of treatment, should receive electronarcosis. Neurotic depressions and

mixed psychoneuroses are also considered good candidates for electronarcosis.

Although many physicians are turning to psychosurgery after electroshock failures with schizophrenia of 2 years' duration, when patients present affective lability, our experience leads us to feel that electronarcosis offers hope to some of these cases and deserves a trial.

The involutional psychoses, particularly with agitation and/or melancholia, should be treated with electronarcosis when electroshock fails. The conclusion seems justified that this step should be taken before performing psychosurgery.

Because of the uniformly poor results with other forms of mechanical treatment of the psychopathic personality we feel that this disorder should be given the opportunity to benefit from electronarcosis.

No particular advantage from electronarcosis was found in manic-depressive psychoses, neurasthenia, or obsessive-compulsive ruminative tension states.

Safety of electronarcosis therapy is reflected in the fact that no deaths directly attributable to electronarcosis and relatively few serious complications occurred in the series. There were no orthopaedic complications in the 110 cases. It should be pointed out again that one of the indications for electronarcosis in this series was poor physical risk for other forms of mechanical therapy.

The advantages of electronarcosis are many. Postshock confusion is relatively little, and therefore more freedom for the patient is possible. Concomitant psychotherapy is made possible, as well as more accurate evaluation of the status of the disorder during treatment. From the patient's standpoint electronarcosis is obviously less objectionable than electroshock.

The disadvantages of electronarcosis as compared to electroshock are apparent. Electronarcosis is time-consuming, fairly exacting, and demands highly trained personnel. It does not seem likely, or even desirable, that electronarcosis should replace the tried and proved mechanical treatment methods. It is, however, a valuable adjunct to the established therapies in our efforts to provide total treatment for our patients.

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# DECAMETHONIUM BROMIDE (C-10) IN ELECTRIC CONVULSIVE THERAPY<sup>1</sup>

WILLIAM HOLT, M. D., MAX RINKEL, M. D., M. NICHOLSON, M. D.,

AND

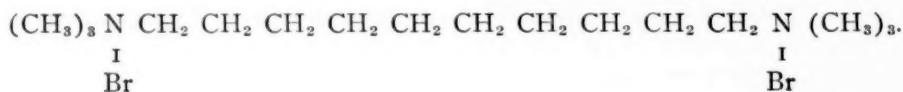
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Certain mental patients who might benefit greatly from electric convulsive therapy present serious physical contraindications to the muscular rigor involved. Severe cardiac diseases, unhealed fractures, and lacerations of muscles, tendons, and nerves present serious treatment problems if convulsive therapy is to be used. A drug that will completely paralyze skeletal musculature for a few minutes without significantly affecting circulation and respiration and convulsive threshold, without frightening the patient, would be ideal. This ideal drug has not yet been found. The authors have tested decamethonium bromide to determine its usefulness as a modifying agent in electric convulsive therapy.

The reports of Davies and Lewis (1), Hobson and Prescott (2) in England, and Grob, Holiday, and Harvey (3) in this country have drawn attention to the value of decamethonium bromide as a substitute for curare. These workers allege decamethonium bromide to be superior to curare in that the drug does not require biological standardization and is free of histamine-like effects.

Decamethonium bromide is chemically known as decamethylene-1, 10 bistrimethylammonium dibromide, the formula for which is



It is a synthetic crystalline substance that may be standardized by physicochemical methods. It is stable, withstands boiling, is soluble in water and in aqueous pentothal sodium, and is nonirritating to tissues.<sup>2</sup>

<sup>1</sup> Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1950.

<sup>2</sup> The drug used in this study was furnished by Burroughs-Wellcome & Co. (U.S.A.) in sterile ampules under the trade name "Syncurine."

*Patients Selected for Treatment.*—Depression was the most common reason for

TABLE 1

DIAGNOSIS OF TREATED PATIENTS

	No. of patients
Manic-depressive psychosis, depressed type .....	6
Manic-depressive psychosis, mixed type....	3
Involucional psychosis, melancholia.....	2
Involucional psychosis, paranoid.....	1
Dementia præcox, other types (paranoid and depressed) .....	4
Dementia præcox, paranoid.....	3
Psychosis with cerebral arteriosclerosis (depressed) .....	1
Psychasthenia, mixed compulsive state.....	1

TABLE 2

PHYSICAL CONTRAINDICATIONS TO UNMODIFIED ECT

Spine fracture, fresh.....	8
Spine fracture, healed.....	6
Teeth severely loosened.....	2
Lacerated tendons and nerves.....	2
Coronary heart disease.....	1
Rheumatic heart disease.....	1
Severe spine deformity.....	1
Laryngeal spasm (also spine fracture) with unmodified ECT .....	3

giving electric shock treatment to the cases on which this report is based.

*Physical Indication for Modifying Convulsive Therapy.*—Those patients deemed suitable for electric convulsive treatment were selected for the present study if they presented serious physical contraindications; these are given in Table 2.

*Methods of Treatment.*—The high degree of skeletal muscle paralysis we wished to achieve required such large doses of decamethonium bromide (C-10), as to usually produce respiratory difficulty and alarm in

the patient. Hypnotics and sedatives by mouth before treatment were not adequate to prevent the patient from having unpleasant subjective symptoms. Pentothal sodium given simultaneously with decamethonium bromide by the intravenous route was found effective to prevent alarm. The usual dose of decamethonium bromide was 5 mg. given together with 250 to 300 mg. of sodium pentothal. We prefer to treat patients with an empty stomach to lessen the frequency of regurgitation.

One hour before the treatment, patients are given a subcutaneous injection of atropine sulfate, grains 1/75. They are urged to void just before treatment to avoid wetting during treatment. The decamethonium bromide and pentothal are injected at a uniform rate so as to complete the injection in 3 minutes. Three minutes after the completion of the injection, the effectiveness of the paralysis is tested by shouting at the patient to clench his fist and raise a knee. A barely perceptible response is the most that should be obtainable. Oxygen is administered by face mask and manually compressed rebreathing bag as soon as signs of respiratory difficulty appear. The electric shock stimulus is given in the same manner as in unmodified ECT but the patient requires no restraint. Upon completion of muscular response, oxygen is again administered until the patient resumes spontaneous breathing. This usually requires 5 minutes if the musculature has been nearly completely paralyzed.

In our desired optimum seizure, the limbs should all be flaccid during the initial phase of the seizure and only minimal clonic movements should be observable in the fingers and toes. Each treatment requires about 15 minutes from the beginning of the injection until the patient is returned to the recovery-room. The patient is able to sit up about 30 minutes after the treatment and may return to the ward 45 minutes after the treatment or sooner if limb power is again adequate. Decamethonium bromide is destroyed with such rapidity in the body that prolonged electric treatments such as electric narcosis may exceed the period of adequate muscle paralysis, which varies from 5 to 15 minutes.

Six treatments or less were required for the majority of the depressed patients. Three

schizophrenic patients received daily treatments 5 times a week for 35 treatments with no change in the amount of decamethonium bromide needed for satisfactory modification.

## RESULTS

In the early part of our experience, 2 patients with fresh fractures of the spine were treated with 3 milligrams of decamethonium bromide. This small dose permitted further vertebral deformity to occur, as the convulsions were inadequately modified. All other cases suffered no physical injury or aggravation of pre-existing injury. All cases received X-rays of the spine before and after treatment.

The psychiatric results of treatment were excellent. Only one patient, who received only one treatment without pentothal to allay apprehension, required further hospital care, and one chronic schizophrenic went on to lobotomy. Nineteen cases went home relieved of symptoms.

*Complications.*—In 3 instances laryngeal spasm occasioned some temporary difficulty in oxygen administration. These patients were sensitive to sodium pentothal. In one instance intubation was required. When oxygen administration was delayed or inadequate, pulse rates increased and an occasional pulse irregularity developed only to disappear as soon as oxygen administration was adequate. Blood pressure usually rose only to fall to pretreatment level within 5 minutes. Response of a patient to a same dose varied very little from day to day.

## DISCUSSION

Training in the use of pentothal anesthesia and positive pressure oxygen administration is necessary if the convulsive seizure is to be greatly modified with decamethonium bromide and pentothal. The treatment team must include a physician able to use a laryngoscope for endotracheal intubation. Ocular paralysis is the earliest sign of decamethonium bromide paralysis, and should be looked for when one-half the injection has been given. Larger doses of pentothal are not recommended as the patient is unable to respond to a command just prior to the administration of the shock current; such response is a valuable guide in estimating the degree to

which the seizure will be modified. Smaller doses of pentothal may fail to allay apprehension. The largest dose of C-10 necessary has been 11 mg.; the smallest dose adequate for modification was 3 mg.

### CONCLUSION

Twenty-one mental patients were given decamethonium bromide to modify electric convulsive response. A dose of 4 mg. or above was necessary to prevent aggravation of pre-existing traumatic injury. Respiratory paralysis is regularly present when doses of 4 mg. or above are given. Pentothal sodium is useful to allay fear occasioned by muscle paralysis, but in sensitive persons pentothal may produce laryngeal spasm. Training in pentothal anesthesia and oxygen administration to unconscious patients is needed by the therapist wishing to use decamethonium bromide for the more serious physical contraindications to ECT. The therapeutic effect of ECT is not interfered with by decamethonium bromide modification of the seizure. Decamethonium bromide is a powerful and potentially dangerous drug, but it is of great value when skillfully used in trained hands.

into clinical medicine as a preventive of complications in ECT many drugs have been offered as possible substitutes. Beta erthyroidine, quinine methochloride, magnesium sulphate, and myanesin have been tried but found to have side effects or otherwise were not as safe or adequate for the purpose. The authors have now offered us another possible substitute, decamethonium bromide, and claim certain advantages over curare.

I wish first to point out some of the statements in the paper that are incorrect or carry implications that are not backed up by scientific evidence.

The authors define an ideal drug as one that "will paralyze skeletal musculature for a few minutes without significantly affecting circulation and respiration and convulsive threshold. . . . This ideal drug has not been found." I would refer the authors to my paper entitled, "Misconceptions Concerning Hazards of Curarization with Electroshock," in which I discussed these misconceptions. Curare does completely fulfill the criteria offered by the authors for an ideal drug, does not offer serious difficulties, and never need be a cause of death.

This report is open to definite criticism because of such statements without a comparative study of the 2 drugs.

We have compared the 2 drugs in over 400 treatments by alternating the drugs preliminary to shock therapy and studying the various reactions. Daily observations were made by several of my staff who did not know which of the 2 drugs was given at the time of the estimation. Details of this study will soon be published and the digest of it is here presented.

	D-Tubocurarine	C-10
1. Degree of paresis.....	Satisfactory	Satisfactory
2. Effect upon circulation, respiration, and convulsive threshold .....	None	None
3. Protest from patients on drug effect.....	Equal	Equal
4. Safety .....	Equal	Equal(?)
5. Pharmacologic antagonist .....	Neostigmine (specific)	None known
6. Accuracy in estimating first treatment dosage..	Accurate	Hard to determine
	Well established	Not established
7. Effect of drug on repeated treatments.....	Constant	Variable
	Uniform dosage	
8. Technique .....	Simpler because dosage is more uniform	Fractionated initial dose makes technique more difficult

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### DISCUSSION

A. E. BENNETT, M. D., Berkeley, Calif.—Since the successful introduction of curare 10 years ago

As you can see, both drugs are about equal and satisfactory upon the first 3 criteria of the authors. Serious protest from patients (pretreatment anxiety) does not depend upon the drug but upon the degree of motor paresis, usually relaxation of throat muscles. The safety factor cannot be settled at this time for C-10 since several workers have shown it to depress respiration severely, and deaths have occurred. With curare we have many thousands of observations, a complete physiologic and pharmacologic background and a specific antidote.

Curare has a decided advantage over syncurine in establishing dosage for the first and subsequent treatments and in simpler technique of administration. In disturbed patients curare has a decided advantage since the patient's cooperation is not necessary as it is with syncurine.

The authors further state, "Training in the use of pentothal anesthesia and positive pressure oxygen administration is necessary. . . . The treatment team must include a physician able to use a laryngoscope for endotracheal intubation." None of this is necessary in preliminary curarization.

I would suggest that the authors carry on more extended studies, especially a comparative study

of the 2 drugs, before drawing final conclusions as to the safety and efficacy of C-10.

WILLIAM L. HOLT, M.D.—The authors agree with Dr. Bennett in his belief that more extended comparative work with d-tubocurarine and decamethonium bromide is desirable. The authors disagree with Dr. Bennett when he says that the training in pentothal anesthesia and oxygen administration we advocate for the user of C-10 is not necessary in preliminary curarization. This training is a necessity because of the great degree of paresis we routinely sought to achieve with decamethonium bromide or d-tubocurarine, our patients often having fresh injuries of considerable severity.



## PHENURONE IN THE TREATMENT OF PSYCHOMOTOR ATTACKS<sup>1</sup>

RUSSELL N. DEJONG, M.D., ANN ARBOR, MICH.

Marked advances have been made in the study and treatment of epilepsy during the past 12 years. Electroencephalography and biochemical studies have contributed to the understanding of the cerebral dysrhythmias, and the development of anticonvulsant drugs has contributed to their therapy(1). The majority of the newer drugs, however, have been most specific for grand mal seizures and have not been as effective in the control of petit mal and psychomotor attacks. Dilantin, mesantoin, and the newer hydantoinates added to phenobarbital have been very helpful in controlling major seizures in a large percentage of patients. Attempts have been made to control petit mal attacks in children with the ketogenic diet and later with glutamic acid with only partial success; tridione and paradione have, however, been more effective in eliminating petit mal seizures. These latter drugs have shown some promise, too, in the treatment of psychomotor attacks, but prolonged observation has led to some disappointment. The use of tridione has been discontinued by many clinicians because of its toxic potentialities, and paradione, while effective in a large percentage of petit mal attacks, does not seem to have as much value in the treatment of psychomotor seizures.

Psychomotor attacks or, as they have been known for a long period of time, psychic equivalents or variants are manifestations of cerebral dysrhythmia in which there are no convulsive manifestations, although at times there may be some tonic spasm or contortion of the trunk muscles, or the patient may stand immobile but with a slow rotation of the body. The principal characteristic of the attack consists of a period of automatic or abnormal behavior. The patient appears to be confused and he may perform some unreasonable, unmotivated, or purposeless

act. He may automatically carry out a seemingly purposeful act in a poorly coordinated manner. Frequently he is seen to mutter to himself or make chewing movements. He may void involuntarily. The degree of impairment of consciousness is variable, but the patient usually is not aware of what he is doing and has complete amnesia for what has transpired, even though there is no complete loss of consciousness during the attack. The patient may become irritable or wildly violent and may commit crimes during the attacks. The seizure may last for a few minutes or many hours. Dream states, fugue states, and epileptic automatisms are manifestations of psychomotor attacks. These seizures occur much more frequently in middle-aged persons than in children. Personality disorders are a frequent accompaniment. The *déjà vu* and *déjà pensée* phenomena that are a part of many psychomotor attacks as well as the dreamy states and the presence of macropsia or micropsia suggest that many of them are associated with disorders localized to the temporal lobes.

Psychomotor seizures may be diagnosed not only by the clinical description of the attacks but also by the electroencephalographic picture(2). They are usually associated with abnormally slow waves varying from 3 to 6 per second, often of a high voltage. The EEG taken during and between attacks may show groups or series of these slow waves with broad or square tops, but with waves of the normal rhythm of from 8 to 10 per second still present at the crest. There may be the appearance of a positive potential that recurs at a rate of 3 to 6 per second superimposed upon an otherwise normal rhythm. Positive spikes or negative spike foci in the anterior portion of one or both temporal lobes with a spread in an anterior and inferior direction are frequently observed. Oftentimes the characteristic electroencephalographic picture is made more definite by a reading taken during either natural or induced sleep.

There has been increasing interest in psy-

<sup>1</sup> Read in the Section on Convulsive Disorders at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1950.

From the Department of Neurology, University of Michigan Medical School and University Hospital.

chomotor epilepsy during recent years(3). The syndrome seems to be diagnosed more frequently, possibly because clinicians are more aware of it than they once were. It is of interest, in going through the records of patients who have been followed in the neurologic clinic of the University Hospital over a period of many years, that many patients on whom previous diagnoses of atypical grand mal or atypical petit mal seizures were made are found on more thorough investigation to have typical psychomotor attacks. While these seizures are not as spectacular as grand mal attacks and do not usually recur with the frequency of petit mal seizures, they may be even more incapacitating than either of the others and their social consequences are apparent. At a recent joint meeting of the American Academy of Neurology and the American Branch of the International League Against Epilepsy, an entire session was devoted to a review of the physiologic aspects, clinical phenomena, medicolegal complications, electroencephalographic findings, and surgical and nonsurgical therapy of psychomotor epilepsy.

In reviewing the literature dealing with the therapy of psychomotor epilepsy, it is noted that the statement has been made that the bromides, phenobarbital, dilantin, mesantoin, tridione, and paradione may be of value. Many authors have stressed the efficacy of dilantin (5, 5-diphenyl hydantoinate sodium(4)) for these seizures, and more recently many have stated that mesantoin (3-methyl 5, 5-phenylethyl hydantoin) is quite specific for them(5). The present author at one time had enthusiasm for tridione (3, 5, 5-trimethyloxazolidine—2, 4-dione), but later observations have shown that it is of value only in isolated cases and especially if used with either dilantin or phenobarbital(6). It is the general consensus of most men who have followed large numbers of epileptic patients that psychomotor seizures are the most difficult to control of all of the manifestations of epilepsy, and this, I believe, is evidence that none of the drugs used in the past is of very much value. Gibbs(7), on the basis of his long experience, stated in 1947, "Unfortunately, none of the substances that are useful against other types of seizures are generally effective against psychomotor at-

tacks, and there is at present no known drug which by any stretch of the imagination can be called specific against psychomotor epilepsy. However, all remedies should be tried, and in rare cases a brilliant therapeutic result will be attained. Mesantoin should certainly be tried alone or in combination with other substances if the seizures are not controlled with phenobarbital, dilantin or tridione. In some cases, psychomotor attacks are precipitated by phenobarbital; more rarely by dilantin." He also stated in the same article, "Medical treatment is generally unsatisfactory in psychomotor epilepsy." Surgical removal of the discharging lesion is occasionally carried out.

Phenurone (phenacetylurea) is fairly closely related from a chemical point of view to dilantin, which is in essence a salt of glycolyl urea. It contains the phenyl radical that seems to be one of the important constituents in the anticonvulsant activity of both phenobarbital and dilantin. Phenurone has very low toxicity when given to experimental animals, and it greatly raises the threshold for or completely suppresses both electroshock and metrazol convulsions. Phenurone has been said to be of value in the treatment of grand mal, petit mal, and psychomotor attacks. Gibbs and his associates(8) reported that 33% of their grand mal, 46% of petit mal, and 50% of psychomotor cases were greatly improved on phenurone. Davidson and Lennox(9) stated that in approximately one-half of their cases control of psychomotor and petit mal seizures had been more complete than that obtained through the use of other medication. Zeifert found the drug to be of value in the control of grand mal and especially of psychomotor attacks(10). Carter and Merritt, however, though they reported that phenurone was more helpful in psychomotor than in grand mal attacks, found complete control of attacks in none of 87 epileptics, and reduction of frequency in only 38%(11).

Our experience with phenurone has been an attempt to control psychomotor seizures, which, as was said above, are being recognized with increasing frequency and are more difficult to treat than the other varieties of epilepsy. We have since July 1, 1948, used phenurone in 59 patients in whom the

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predominant epileptic manifestation was psychomotor seizures. In 17 of these cases (29%) the patients had only psychomotor seizures; 16 patients (27%) had psychomotor and grand mal attacks; in 8 cases (13.5%) there were psychomotor and petit mal episodes; the remaining 18 (30.5%) had either psychomotor, grand mal, and petit mal seizures, or an electroencephalographic picture of a mixed type of epilepsy (Table 1). In 11 cases (18.6%) phenurone was discontinued within the first week because of the immediate onset of drowsiness, anorexia, nausea, weakness, and related symptoms (Table 2). These were considered con-

was able to stop the phenurone after surgical treatment of his epilepsy. The remaining 28 patients (47.8% of the total) have continued to use the phenurone. These patients have noted no toxic symptoms whatever, and state that the use of phenurone or its addition to previously used medication has been successful in controlling attacks. All these patients had been previously treated with all the common anticonvulsant drugs, alone or in combination. In 75% the seizures have been under complete control for 6 months to 2 years; the remaining 25% state that for the first time since the onset of their symptoms their attacks have been diminished to such an extent (75 to 90%) that they can carry on with fairly normal activity. Of this group of 28 patients, 9 (32.2%) are taking phenurone alone, 5 (17.8%) are taking phenurone with dilantin, 2 (7.2%) are taking phenurone with phenobarbital, and 12 (42.8%) are taking phenurone, dilantin, and phenobarbital. Every one of the patients who is using phenurone in combination with other anticonvulsants has a mixed type of convulsive disorder.

Phenurone is being used with care and very strict observation because of the fact that in a few cases serious complications have been reported. At the request of the Abbott Laboratories, all patients receiving phenurone since January 1, 1950, have a complete blood count performed every 4 weeks and a urobilinogen test on the urine every 2 weeks. Additional laboratory tests that have been carried out on a large percentage of the patients receiving phenurone include determinations of the total blood bilirubin, free blood bilirubin (one minute), direct free bilirubin (30 minutes), combined (indirect) blood bilirubin, gamma globulin, thymol turbidity, cephalin flocculation (24 and 48 hours), serum bromsulphalein, total serum cholesterol, free serum cholesterol, and glucose tolerance. Among the serious complications that have been reported are the following: jaundice; acute severe damage to the liver parenchyma; increased urinary urobilinogen; urinary casts, blood, and albumin; skin rash; fever; personality disorder; and acute psychotic reactions. Most reports of toxic complications have, however, been made by personal communica-

TABLE 1

## SUMMARY OF PATIENTS TREATED WITH PHENURONE

Type of seizure	No.	%
Psychomotor only .....	17	29.0
Psychomotor and grand mal.....	16	27.0
Psychomotor and petit mal.....	8	13.5
Psychomotor, grand mal, and petit mal..	18	30.5
Total .....	59	100.0

TABLE 2

## RESULTS OF TREATMENT WITH PHENURONE

Results of treatment	No.	%
Control of psychomotor attacks.....	28	47.8
Attacks controlled; drug discontinued because of toxicity.....	4	6.7
Attacks 50% controlled; drug discontinued .....	7	11.8
Toxic effects in first few days; drug discontinued .....	11	18.6
Failure of control; drug discontinued...	4	6.7
Drug discontinued, reason not known..	4	6.7
Attacks controlled by surgery; drug discontinued .....	1	1.7
Total .....	59	100.0

traindications to the use of the drug, but they were not otherwise serious complications. Four patients (6.7%) continued to use the drug for periods up to 2 months, because of control of attacks, but eventually discontinued its use because of toxic symptoms. In 7 patients (11.8%) attacks were about 50% controlled, but it was not considered of value to continue the drug. In 4 patients (6.7%) the phenurone did not help in the treatment of the symptoms. Four patients (6.7%) discontinued the drug without stating the reason. One patient (1.7%)



tions, and the literature as yet contains but few specific reports(12). Gibbs(8) has stated that the limiting side effects in his series are as follows: exaggeration of personality disturbances—20%; anorexia—12½%; feeling of weakness—6%; headache—6%; insomnia—6%; palpitation—2½%, rash—1%. He reports one patient in whom jaundice developed, but subsided on withdrawal of phenurone. Forster and Frankel report one fatality in a patient who had shown a slight decrease in the blood leukocyte and erythrocyte count following treatment with mesantoin, and then while on phenurone for a period of 8 weeks developed aplastic anemia from which he died 1 week later(13). They have also reported the case of a patient who developed insensitivity to pain while taking phenurone(14). Upon discontinuance of the drug, this lack of sensation disappeared. Zeifert(10) noted peculiar psychologic regression in a few instances and also a 10% drop in the leukocyte count during the first 7 to 14 days following phenurone, but thereafter these findings approximated the pretreatment levels. He noticed that the fasting blood glucose level decreased 10 to 15% in practically all instances, but levels remained within the limits of normal. There was also a consistent change from normal values in the albumin and globulin content of serum with a depression of the albumin content. The cephalin flocculation test in 3 patients was slightly elevated after treatment had begun and the serum bilirubin level slightly increased in 4 patients, but only after several months of medication. He expressed the belief that further studies of possible liver toxicity should be made.

Aside from the symptoms that necessitated immediate discontinuation of the drug in our patients, we have had only one serious complication in a patient who showed evidence of acute liver damage and also exaggeration of the previous personality abnormality.

#### REPORT OF CASE

S. J., a 21-year-old-man, had first developed epilepsy at the age of 12. At the outset, he had only grand mal seizures, but about 2 years later he began having spells during which he would

become somewhat dizzy, wander about the room or lie down for a few minutes, and have complete amnesia for the episode. The patient has been brought up under very poor environmental circumstances. The father was a chronic alcoholic and the mother was an oversolicitous, overdefensive individual. The parents have not spoken to each other for many years, although the family lives in a 3-room apartment. The patient sleeps in the bedroom with his father, and a younger sister with congenitally dislocated hips sleeps in the living room with the mother. It was stated that the patient was very shy and seclusive. He did not associate with either boys or girls. He was sensitive about an acneform eruption on his face, and was very irritable and "could not be kidded." Attempts had been made to control the patient's seizures over a period of many years with dilantin, phenobarbital, mesantoin, and other drugs. It was stated that many of the attacks were precipitated by emotional factors, but the home situation is so poor and the mother was so much overconcerned about the boy that it was very difficult to differentiate between the organic and the psychogenic.

The patient was first seen in the University Hospital in 1946 at the age of 17. His attacks had not been controlled by dilantin and phenobarbital, and at that time tridione was substituted. For some time the patient seemed to be getting along very much better, and would go for periods from 6 months to a year without attacks. He returned, however, in June, 1949, stating that he had had 4 attacks since the first of the year; 2 of these were of the grand mal type and 2 had been psychomotor seizures. The patient had recently obtained employment but had lost his job because of attacks occurring at work. It was felt that more adequate control of the seizures was indicated, and he was placed on phenurone, 0.5 gm. 3 times a day, in addition to the dilantin 0.1 gm. 4 times a day.

The patient communicated with the hospital on July 15; he stated that he was getting along satisfactorily and asked for more phenurone. Early in August he developed anorexia, fatigue, malaise, drowsiness, fever, and gradually increasing jaundice. On August 13 he was admitted to the Deaconess Evangelical Hospital in Detroit with an outside diagnosis of infectious mononucleosis. At that time he was febrile, jaundiced, and had recently become disoriented and confused, and had developed delusions. He was transferred to the University Hospital on August 24, 1949. On admission he was seen to be icteric, and he was lethargic, confused, and disoriented. He was markedly hyperactive, but showed no neurologic abnormalities. An August 25 the total blood bilirubin was 13.4 mg. per 100 cc., the gamma globulin was 21.7 units, the thymol turbidity 6.0 units, the cephalin flocculation was 3+ in 24 hours and 4+ in 48 hours, the serum bromsulphalein showed 71% retention, and the urinary urobilinogen was strongly positive.

The patient was hospitalized for 8 weeks and was treated symptomatically. His jaundice cleared up within the first 10 days. His liver function tests

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gradually returned to normal, and at the time of discharge his total blood bilirubin was .59 mg. per 100 cc., his gamma globulin was 10.5 units, thymol turbidity 2.5 units and the cephalin flocculation 1+ at both 24 and 48 hours. His urinary urobilinogen was negative and the serum bromsulphalein showed 0.7% retention in 45 minutes. The confusion and disorientation cleared up fairly rapidly also, but there were residual shyness and seclusiveness with paranoid ideas similar to the patient's premorbid personality. He was discharged with dilantin only and has continued to have occasional grand mal and psychomotor attacks.

### CONCLUSION

During the past 2 years phenurone (phenacetylurea) has been administered to 59 patients whose presenting complaint was psychomotor epilepsy. In 17 of these patients (29%) the psychomotor attacks occurred without other manifestations of epilepsy; in 42 (71%) there were associated grand mal and/or petit mal seizures. The medication was discontinued because of the development of toxic symptoms in 15 patients (25.3%); it failed to help in 4 patients (6.7%); it was discontinued for other reasons in 12 patients (20.2%). In the remaining 28 patients (47.8%) phenurone, with or without other anticonvulsants, brought about the most complete control of attacks that the patients had experienced to date, and every patient had been tried on almost every known drug used for the treatment of epilepsy before the institution of phenurone therapy. In 75% of these patients the attacks are under complete control, and in the remaining 25% they are 75% to 90% controlled.

Phenurone should be considered an important addition to the drugs used for the treatment of epilepsy, especially psychomotor seizures, which respond poorly to other medication. Its use is not without danger, but serious toxic results are infrequent. The most common untoward symptoms associated with its use appear in the first few days of treatment, and indicate immediate withdrawal of the drug. Patients receiving phenurone should be watched carefully for the possible development of damage to the hematopoietic system and to the liver; withdrawal of the medication is indicated as soon as these appear. An acute toxic hepatitis occurred in one instance in our series. The psychological

changes reported in patients with psychomotor epilepsy who are receiving phenurone were encountered in only one instance (the same patient), and he may have had what should be diagnosed as a toxic psychosis superimposed upon a schizoid psychopathy. It is possible that the reported psychologic changes secondary to discharging temporal lobe lesions(15). The majority of our subjects, who are ambulatory patients of the neurologic clinic of the University Hospital, failed to show significant personality abnormality before the institution of therapy, and showed no changes thereafter.

Although phenurone must always be administered with caution and discretion, and patients who receive it must be followed carefully, it is considered to be no more toxic than many other therapeutic agents. It is capable of relieving certain patients of seizures that are not affected by other antiepileptic drugs. It is of such definite value in the treatment of psychomotor epilepsy that it is hoped that it will soon be available for general use. It is believed that the warnings of the manufacturer should at all times be borne in mind, however, and that treatment with phenurone should be instituted only by a physician experienced in the therapy of epilepsy. It should be employed with caution in patients who have previously shown personality disorders, and it may be advisable to hospitalize such patients during the first weeks of treatment(16). The patient and his family should be instructed to watch for changes in behavior, evidences of gastrointestinal disturbance or jaundice, rash, and fatigue, and report these to the physician immediately. The most serious complications, which should be kept in mind, include aggravation of pre-existing personality abnormality, hepatic damage, and bone marrow depression.

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## DISCUSSION

DR. THOMAS K. DAVIS (New York, N. Y.)—First we want to compliment Dr. DeJong for his continued record of research into the problem of therapy in the epilepsies. His previous papers in this field have been impressive and we can commend him for the most recent investigation. The thoroughness of his medical and laboratory testing is impressive.

He reports on a large series of cases—namely 59. To the present discussor that seems a large number if I judge from the patients with psychomotor epilepsy that we see in New York. I am inclined to believe that we are missing psychomotor cases and permitting them to pass as petit mal.

As a matter of fact there is a rather shadowy line drawn between petit mal and psychomotor attacks if the latter last only the few seconds that mark the duration of petit mal. As I take it, the difference rests upon the occurrence of any degree of automatic movement during the period of disturbed consciousness. The inclusion of some automatic movement moves the case into the psychomotor group. Does any trivial amount of automatic movements in those seconds warrant the inclusion of the case in the psychomotor group? Is there any consensus concerning the quantitative factor here? It is, of course, admitted that if, time after time, the same automatic movement marks the attack then the classification becomes easy.

If there is difficulty in separating some psychomotor cases from petit mal, there is still the greater difficulty in some instances of distinguishing between psychomotor epilepsy and hysterical amnesic periods with automatism.

I am reminded of this difficulty because of a fairly recent patient—a young man still in college who had had two amnesic periods. The first lasted for approximately 12 hours but the other one was for 8 days. Psychogenic factors in the case are to be found in his poor adjustment to his parents, plus his unwilling endurance of a collegiate régime that he much disliked and for which he was not properly equipped. He has never had either grand mal or petit mal but his electroencephalographic record is suggestive of epilepsy. In the amnesic episode lasting 8 days he drove his car across the length of a southern state and regained contact in a strange part of that state.

I do not know whether everyone here, in spite of the electroencephalogram, would agree that the diagnosis is a hysterical state rather than epilepsy. That appears to me to be the diagnosis in view of the duration of the periods of amnesia. Do we believe that a psychomotor attack can have a duration of 8 days?

I do not make these references to certain difficulties in the diagnosis of psychomotor epilepsy for the purpose of bringing into question the authenticity of Dr. DeJong's case material but only to expose my own proneness to clinical uncertainties.

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In a recent report on the use of phenurone (in the *Journal of Pediatrics*, February 1950) Livingston and Kajdi give their findings with 104 patients; 56 were treated with phenurone in addition to their previously ineffective medication and 48 were treated only with phenurone. In agreement with Dr. DeJong they found the phenurone most effective in controlling spells of psychomotor epilepsy of the idiopathic type. Proteinuria developed in 11 patients but, because of the absence of any laboratory evidence of kidney impairment, the drug was continued.

They report personality changes in 6 patients and these symptoms consisted of overactivity, great restlessness, insomnia, constant and incoherent speech, and in one boy belligerency and destructiveness. In these 6 patients the drug was discontinued.

Headaches and feelings of fullness in the head arose in 5 patients and led in each instance to the discontinuation of phenurone. Drowsiness was induced in 2 instances. Skin rashes developed in 4. In one case, the dermatitis was accompanied by a hepatitis. No haematological changes occurred in the series.

Dr. DeJong reports that he stopped the administration of phenurone because of the appearance of

toxic symptoms in 25.3%. In the Livingston-Kajdi series, the discontinuance was smaller, namely 15%.

Dr. DeJong reports that of his patients 28 could be continued on treatment and were brought under control, 75% of them completely so. The 28 patients represent 47.8% of his series. Livingston and Kajdi found 22 of their 46 cases with psychomotor attacks controlled—strangely enough, also, 47.8% of that series.

Phenurone joins mesantoin in being a threat in some instances to the blood marrow, but apparently it goes beyond mesantoin or any of the anticonvulsive drugs—or better the antiepileptic drugs—in the danger to which it exposes the liver.

Are the blood checks done once or twice or even 3 times a month a sufficient safeguard? Certainly the ill effects on the blood marrow can arise suddenly and unexpectedly between the time of the blood counts and, if they develop, can be rapidly fatal.

I would raise the question whether or not the dangers do not outweigh the advantages and whether, because of the hazards, phenurone is a safe drug for general distribution. It seems hardly likely that, in the hands of the general practitioner, phenurone would be given the skillful handling that it has received from Dr. DeJong.

## A CLINICAL EVALUATION OF TETRAETHYLTHIURAMDISULPHIDE (ANTABUSE) IN THE TREATMENT OF PROBLEM DRINKERS<sup>1</sup>

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E. A. MACKLIN, M.D., G. H. CROOK, Ph.D., N. BURBRIDGE, M.D.,  
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*San Francisco, Calif.*

Since 1948 when several Danish workers first reported on the sensitizing effect of tetraethylthiuramdisulphide (Antabuse) to ethyl alcohol, several reports have appeared in the literature describing its therapeutic efficacy in problem drinkers (1-4). The drug is still classified as a "new drug" under the Federal Food and Drug Act and is not yet available for prescription use, since the indications, contraindications, and complications (1, 8) of the medication have not yet been definitely established. The purpose of the present investigation was to study its psychologic, pharmacologic, and therapeutic effects and to determine if it was a drug safe enough for general use.<sup>2</sup>

### PROCEDURE

#### I. Selection of Patients.

Since April, 1949, 100 patients have been studied, 84 of these on an outpatient basis and 16 on an inpatient basis. Ten of the inpatients came from a state hospital on alcoholic commitment as volunteers for a study of cerebral blood flow during the alcohol-Antabuse reaction. Approximately half of the patients were self-referrals to the clinic, the remainder having been referred by a spouse, physician, agency, employer, or other patients under treatment. Twenty-five patients, in addition to the 100 actually interviewed, were given appointments by phone but failed to keep them. All the patients were from the middle social group except 2 from the upper lower class. Eight were or had

been in professional occupations. The occupational spread below this level showed a fair sampling for an urban population of clerical, skilled, and semi-skilled workers and salesmen. Only 2 persons came directly from "Skid Row" and neither of these was interested in a treatment so "inconvenient" as Antabuse therapy. The age range of the group was 25 to 67 years with median age of 41. There were 77 males and 23 females. There was no restriction as to whether the patient was considered to have a good or poor prognosis. Only 2 patients were not accepted for treatment because of physical disease. One of these had had a recent myocardial infarction and the other suffered from diabetes mellitus.

#### II. Preliminary Studies.

The first contact with the patient was made by an admitting psychiatric social worker. Following this, the alcohol history was obtained from him by the psychiatrist and a general impression of personality and motivation for treatment was formed. The treatment program was explained to the patient frankly with emphasis on the fact that he could not indulge in drinking without developing extremely unpleasant symptoms. Sixteen of the 100 patients decided at this point or during the period of preliminary study that they could not devote the necessary time to the treatment program outlined or that they wanted to try it again on their own or that they were uninterested in a treatment that would not permit some social drinking. While waiting for completion of their studies, the patients tended to go on just one last spree before having to remain sober if the studies were not completed in one week. Such an occurrence caused extreme disappointment to wives and families. In fact, 2 women left their husbands at this

<sup>1</sup> Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1950.

From the Langley Porter Clinic and the Divisions of Psychiatry and Pharmacology of the University of California School of Medicine.

<sup>2</sup> We wish to express our gratitude to Ayerst, McKenna & Harrison, Limited, for providing the Antabuse used in this study.



point but those 2 men have become "model patients" since beginning medication and have been rejoined by their wives.

Preliminary studies of those who were interested in following the treatment included an average of 5 hours of psychiatric interviews in which the patient's personality was evaluated, particularly from the viewpoint of familial, social, occupational, and economic background and present motivation for treatment. A Minnesota Multiphasic Personality Inventory done on each patient after the fourth month of the program was studied by the psychologist (GHC.) These studies were done with the hope that they might provide information that would make possible a re-

the daily dose be taken in the morning and under the observation of another person regularly so that it was not "forgotten." On the fifth day of medication the first trial with alcohol was made in the hospital. The patient was given the beverage of his choice in an amount to contain alcohol equivalent to that in 0.5 ml. of 90 proof whiskey per kilogram of body weight. In the patient of average weight this amounted to approximately what would be contained in a drink at a public bar. The patient was observed for reactions for 2 hours, or longer in the event of a severe reaction. Signs and symptoms were regularly recorded throughout the testing period. In Table 1 are shown the more

TABLE 1

## ANTABUSE ALCOHOL REACTION

5-20 min.	20-50 min.	50 min. to 6 hrs.
Blushing face	Headache	Hangover
Conjunctival injection	Dyspnea	Sleepiness
Feeling of heat in face	Generally indisposed (hangover)	
Tachycardia	Pallor	
	Dizziness	
	Nausea and vomiting	
	Chest pain	
	Weakness	

liable prediction as to the likelihood of success of treatment. Further studies included physical, neurological, and psychiatric examinations. Numerous evidences of minor personal neglect were found in these patients. Only 2 patients showed signs of alcoholic peripheral neuritis. Enlarged livers were commonly palpated but tests did not show evidence of abnormal function. Laboratory studies included a complete blood count, blood serology, urinalysis, cephalin flocculation test for liver function, X-ray of the chest, and an electrocardiogram. Other tests such as blood sugar determination, electroencephalograms, and further liver function tests were done when indicated.

### III. Method of Drug Administration.

If no physical contraindication was found, medication was usually started on the fifth day of observation with 1.0 gram of Antabuse by mouth, 1.0 gram the next day, 0.75 gram the third and fourth days, and 0.5 gram the fifth day. The patient was advised that

frequently observed symptoms and signs with the time periods during which they usually occur. Fig. 1 shows the symptoms

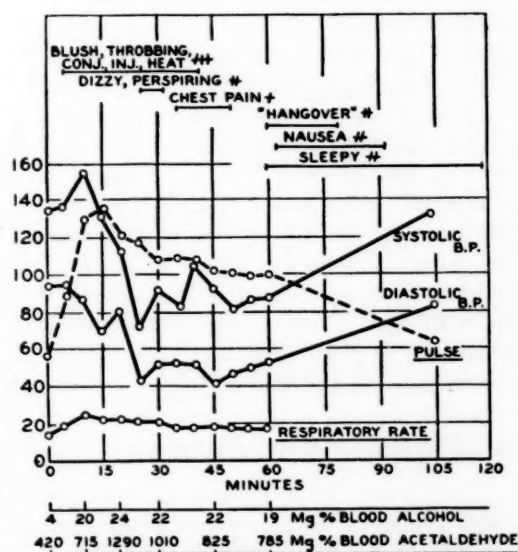


FIG. 1.—Signs and symptoms observed in a moderately severe reaction.

and signs observed in a moderately severe reaction in one patient and is rather typical of the group. The graphs of blood pressure and pulse show an early rise followed by a marked drop in the blood pressure. The principal symptoms and signs observed in this patient are noted on the upper part of the graph and duration is indicated by the length of the line beneath. An early tetrad of blushing, throbbing, conjunctival injection, and heat in the face that began within 4 minutes of the ingestion of alcohol, was of severe degree, as indicated by the 3+ sign, and lasted for 35 minutes. Dizziness and perspiration were of moderate degree and short duration. Mild chest pain lasted for 15 minutes. Hangover, nausea, and sleepiness were all of moderate degree. The blood alcohol and acetaldehyde taken at intervals through the first hour are recorded on the lower part of the figure. Both reached a peak in 20 minutes with an alcohol level of 24 milligrams percent and a blood acetaldehyde of 1290 micrograms percent. A second trial was performed one week later; generally half the amount of alcohol beverage administered on the first trial was given. A maintenance dose of Antabuse was determined on the basis of the severity of reaction to these trials. The dose was considered sufficient when the reaction resulting from the ingestion of one drink would discourage the patient from taking a second. A few more patients required 0.5 gram of Antabuse daily than required 0.25 gram daily and only a few needed 1.0 gram daily. It was planned to keep each patient on regular Antabuse dosage for 6 months, during which period he was seen at intervals of 2 to 4 weeks. At the end of this time the treatment was discussed with the patient and he was asked if he felt that matters were well enough in hand so that he could get along, taking Antabuse only when he felt that there was a likelihood of his "falling off the wagon."

#### IV. The Role of Psychotherapy.

Five patients who wished to discuss emotional problems were given as much time as possible to do so, and in general this was one hour per week. An additional 12 have been seen occasionally to discuss specific

problems that arose during the course of treatment. The additional benefit from such management has been difficult to evaluate. No specific effort to interest the patients in psychotherapy, individual or group, was made as it was planned to compare them with another group in whom intensive psychotherapy will be undertaken in conjunction with Antabuse treatment. However, the knowledge that this treatment was a special study, and that many laboratory procedures were being carried out by numerous people during the alcohol trials must have had strong suggestive therapeutic effect on the patients. It is of interest to note that, prior to the use of Antabuse, the problem drinker, when offered psychotherapeutic help, commonly pleaded, "But haven't you got a pill that will cure me?" Now that we have a "pill" to offer, he asks, "But what about my problems that make me drink? Isn't anything going to be done about them?" However, after these patients are started on treatment, the great majority of them deny that they have any emotional problems.

#### V. Pharmacologic Studies.

Certain observations relative to the pharmacologic studies completed on 34 of the patients are worthy of note(7). An increased alcohol level in the blood is necessary for a reaction to occur. Three of the patients showed no significant rise in blood alcohol at the time of the first alcohol test and no observable clinical reaction. The intensity of the clinical reaction, however, is not directly dependent on the height of the alcohol level up to 49 milligrams percent. Levels higher than this have not been observed resulting from a single drink. Neither is the intensity of the clinical reaction necessarily dependent upon the height of the blood acetaldehyde levels obtained from the doses of alcohol given. In 3 patients there was increasing sensitivity to Antabuse between the fifth and twelfth day after the medication was begun, as evidenced by a significantly higher blood acetaldehyde on the second trial with a smaller dose of alcohol. Whether the increased blood level of acetaldehyde during the Antabuse-alcohol reaction is the cause of

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the symptoms displayed still remains to be proved (5, 6).

#### THERAPEUTIC RESULTS

Of the total of 100 patients, 71 were started on medication longer than 2 months ago. Eleven patients have discontinued treatment of their own choice after 10 days' to 3 months' medication: 1 of these by becoming acutely depressed and taking his own life, 3 because they were not interested in going on with the treatment as they had entered into it only on the insistence of relatives, 1 because he complained that dizziness and fatigue were too unpleasant, 3 (psychotic patients) because they were no longer interested in the treatment, and 3 who discontinued for reasons unknown. Medication

TABLE 2

## RESULTS OF TREATMENT OF 100 PROBLEM DRINKERS

	No.
Successful (2-6 months).....	38
Successful (1-2 months).....	11
Improved (1-6 months).....	16
Discontinued treatment .....	17
By patient .....	11
By therapist .....	6
Failed to start on Antabuse.....	18
Therapist's decision .....	2
Patient failed to complete study.....	16
Total .....	100

was discontinued by the therapist in the first 2 weeks in 6 cases: 2 because acute depressive psychotic symptoms developed, 1 because of inability to discontinue paraldehyde, 1 because of a myocardial infarction, and 2 because of evidence of coronary insufficiency noted in the electrocardiogram during the first alcohol trial. Of the total of 17 patients who discontinued treatment, 12 are known to have returned to excessive drinking, 1 is dead, 2 are reported to be abstinent, and the condition of 2 is unknown. Fourteen of the 17 discontinued treatment during the first 2 months of medication.

Thirty-three of the patients have taken their medication regularly for periods of 2 to 6 months and have been completely abstinent. Five patients have been irregular in their daily dose of Antabuse; 2 of these have remained abstinent, 3 have had a single drink. This drinking has consisted of a

bottle of beer in the hope that it did not contain enough alcohol to cause a reaction. However, these patients usually stopped drinking after no more than a half bottle. Sixteen patients have been irregular in their medication and have had one or more alcoholic sprees but have returned to treatment. The amount of time devoted to excessive drinking in each of these patients since they have begun treatment is considerably less than previously occurred. In spite of occasional lapses from sobriety, half of these have made a much more adequate occupational and family adjustment than they did before treatment began.

All patients have been asked to contact us at any time that they feel like discontinuing medication. However, with a total of 34 patients who have either temporarily or permanently discontinued treatment, only 4 have contacted us to indicate that a lapse from Antabuse medication was imminent. In spite of our efforts to encourage the patients to continue the drug, 3 of these 4 failed to take it regularly.

#### PROGNOSTIC FACTORS

Data derived from two sources have been used in an attempt to determine the predictability of success or failure with this treatment: (1) the Minnesota Multiphasic

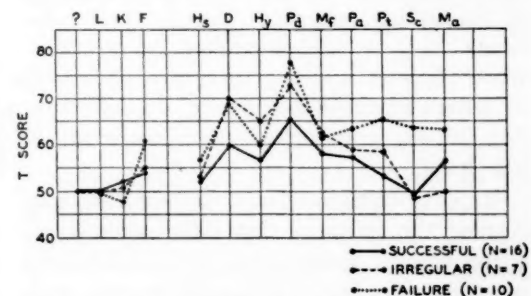


FIG. 2.—Group profiles (medians) on the Multiphasic Personality Inventory of 33 males started on Antabuse. Scores uncorrected for K.

Personality Inventory and (2) psychological and situational information obtained from the patient during preliminary study.

For purpose of analysis on the Multiphasic Personality Inventory the treated cases were divided into 3 groups: successful, irregular, and failure patients. Fig. 2 is a composite graph of average findings on 33 males.

All scores for the successful group are well within the normal range. The failure group shows generally much more evidence of psychopathology. The irregular group falls between the other two for most scales. The only significant departure from this is on the hysteria scale.

All 3 groups show a primary peak on the psychopathic scale with a secondary peak on depression. The most outstanding differences between the groups are the significantly higher elevation of the failure group at the psychotic end of the profile, and the F minus K validating scores.

Findings reported here from the information obtained in interviews are limited to those that appear to be of prognostic importance for response to Antabuse treatment. Forty-one male patients are represented in the following summary.

Unexpectedly it was found that relatively more failures than successes or irregulars were referred for treatment by themselves or their family members. The other sources that account for more than 85% of referrals in the successful and irregular groups are scattered amongst more impersonal and higher prestige sources; friends, employers, personal physicians, social agencies, and state or other hospitals.

A most interesting relationship is found in the sibling patterns. The successful patients have a preponderance of brothers, while there is a still greater preponderance of sisters amongst the failures—a difference that closely approaches significance at the 5% level.

Reports obtained from the patients concerning the attitudes that their parents had borne toward them during their childhood were classified into categories ranging from "loving, affectionate, companionable, encouraging, helpful," at one end of the scale to "strict, severe, overly-critical, punitive," at the other. A finding of high reliability (2% level) appeared in descriptions of their mothers' attitudes. Many more "positive" attitudes—loving, helpful, indulgent, partial toward patient, self-sacrificing, overprotective—were ascribed by the successful and irregular patients to their mothers. Conversely, more negative and indifferent atti-

tudes—possessive, demanding, cold, withdrawn, strict, punitive, hated, and hostile—were reported by the failures for their mothers.

A comparable inquiry into the patients' attitudes toward their parents failed to disclose clear-cut differences, but there is a strong suggestion that failures held more antagonistic attitudes toward their fathers.

Among the more provocative but less certain data are trends in reports concerning the ways in which his closest relative (usually wife, occasionally mother) reacts toward him at home. The failures tend to report more antagonistic, quarrelsome and nagging behavior from their womenfolk during a drinking bout; while the successes report relatively more loving, accepting, and other positive behavior, and receive more tender care.

An attempt was made to evaluate certain aspects of the patients' subjective feelings and inner lives. Both successful and failure groups show a decrease in over-all happiness upon entering the long-term period of excessive drinking with a sharp rise when entering a drinking bout. This rise is greater for the failures than for the successes. More striking still is the plummeting dive that the failures take during the hangover period; they greatly outdistance the successful group. Thus it appears that the failure group get a greater lift out of drinking—drinking may actually have a greater (momentary) psychological value for them.

All groups show increases in feeling, of depression, anxiety, guilt, worry, pessimism, and lack or loss of self-respect since onset of excessive drinking. But the failures show a markedly greater increase than do the successes for this long-term period. During the drinking bout the failures show an appreciably greater decrease in intensity of these feelings, again pointing out the relatively greater subjective gain to be derived from alcohol by the failures.

The patients' conscious motivations for treatment were inquired into in regard to (1) internal fears and anticipations of the consequences of continued alcoholism and (2) external pressures or influences exerted upon him by others, as perceived by the patient. No stable group differences were found



in the number or pattern of internal fears. However, when the external pressures are weighted in terms of recency, the failures report a significantly greater press from members of their family than do the successes. This finding fits neatly into the pattern noted as emerging from the patients' family relationships. In other words, pressure from the family fails dismally to effect a higher degree of sobriety.

#### COMPLICATIONS

One of the male patients who had no prior history of cardiac impairment, and in whom all preliminary cardiovascular examinations were negative, suffered a severe myocardial infarction as a direct result of drinking part of a bottle of ale on the eleventh day of Antabuse medication. He attempted to walk to his home-bound bus line but became so distressed that he called a taxi cab and came to the clinic. His electrocardiogram taken during the reaction was very abnormal and 2 days later showed typical signs of an infarction. Antabuse medication was discontinued in this patient. In 2 other patients medication was discontinued because of abnormal electrocardiographic findings during the first alcohol trial. In neither of these patients had preliminary study indicated evidence of cardiac disease. The electrocardiograms showed marked T wave changes and a 2-millimeter depression in the S-T segment in certain leads, which were interpreted as definite evidence of localized myocardial ischemia.

There have been 16 cases of a shock-like state occurring during alcohol trials in which the diastolic blood pressure fell below 50 millimeters of mercury; in 2 patients for periods of 5 and 10 minutes no blood pressure reading could be obtained. Intravenous ephedrine sulfate was found quite effective in the treatment of this condition. Three times, mild grand mal convulsions were observed but in only one of these patients had there been any history of a previous convulsion. In this patient later as well as in 2 other patients with a convulsive history, continuous electroencephalographic studies were made during an alcohol trial but in

none was the wave pattern made more abnormal during the course of the test.

In 10 patients under treatment definite psychotic reactions have been observed. In 6 cases this was a severe depressive reaction. One of these patients committed suicide, 3 made unsuccessful suicidal attempts, and 1 was preoccupied with ideas of suicide. Two patients developed schizophrenic psychoses that were not evident prior to treatment and 1 a paranoid reaction. In 1 patient transitory manic-like reactions appeared twice. These psychotic reactions are considered to be the probable result of the psychological effects of alcohol withdrawal rather than the direct result of toxic effects of Antabuse.

Early toxic symptoms from Antabuse occurred in almost every patient but were only of severe degree in 20% of the cases. Sleepiness, gastrointestinal complaints, fatigue, decreased sexual potency, headache, and dizziness occurred in this order of frequency. Most severe symptoms were only of a few days' duration and it was rare to find any side effects of the medication still persisting after 2 months' treatment. In a few patients, transitory eosinophilia and occasionally an increased total white blood count due primarily to increased lymphocytes in the blood were observed. No harmful effects on blood, kidney, or liver have been observed after medication over periods exceeding 6 months.

#### SUMMARY

The Antabuse treatment of problem drinkers appears to be of definite value in the medical management of certain patients by significantly reducing the amount of time devoted to excessive drinking over a long period. It is more likely to prove of value in those persons showing no evidence of psychotic trends and lesser degrees of neurotic disposition. There is little evidence to indicate that it will bring about a permanent cure so that Antabuse may be discontinued after 6 months of ingestion of the drug when given as outlined. It is of utmost importance to recognize that psychotic reactions may occur while the patient is under Antabuse medication and that serious cardiovascular accidents may occur should the patient consume

alcoholic beverages during the course of treatment.

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## THE INFLUENCE OF SUBCORTICAL (DIENCEPHALIC) BRAIN LESIONS ON EMOTIONALITY AS REFLECTED IN THE RORSCHACH COLOR RESPONSES<sup>1</sup>

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The work of recent Rorschach investigators has tended to formulate a theory of "generalization" in regard to the effect of organic brain damage in keeping with which Piotrowski(1, 2) and followers(3-5), investigating this type of psychiatric disorder by means of the Rorschach test, have considered the various lesions as one. Klopfer and Kelley(6) in one of the more comprehensive manuals published to date state that we "would not expect to find such personality changes occurring in discrete cerebral lesions." Harrower-Erickson(7) in her well-known study of brain tumors reached conclusions that seemed to substantiate the theory of generalization: "... in general there is little choice between the lesions. All records deviate markedly from the normal. . . . The outstanding characteristics of the records of patients with tumor are their uniformity and constriction. The uniformity would make one think that all the patients had been submitted to similar conditions, so that this common influence resulted in a uniform personality structure. . . ."

Some differences were noted in the performances of epileptics(8, 9) and postencephalitic parkinsonism(10-12), but this did not serve to alter the tendency to consider the organic psychoses (with intracranial damage) as an entity.

Piotrowski in his significant papers described 10 Rorschach signs, the presence of any 5 or more in an individual record strongly suggesting intracranial damage. Though further studies have offered some criticisms(3-5) and indicated differing levels of validity for the various signs, the "criterion" remains as a well-established method of selection. Indeed, when Ross(13, 14) devised his instability-disability scale to differ-

entiate those suffering from "functional" as contrasted with "organic" mental disorders, he used Piotrowski's findings in formulating his disability scale and included 8 of the 10 signs. What is important for our consideration, however, is that both authors did not consider the localization of the lesions, but grouped their "organic" cases together.

According to psychiatric experience, which has demonstrated the validity of the principles of localization, it seemed appropriate to investigate the possibility that varying reactions to the Rorschach test might be obtained from patients with organic brain lesions of differing localization. Specifically, we wished to investigate the color response, which has been recognized as a measure of the individual's affective responsiveness, his emotionality.

Rorschach(15) in his original publication reported an empirically established relation between color response to his test and the affective state of the subject. The extent of his investigations and the subsequent verification by the many who have used this technique indicate, beyond doubt, that this relationship exists. Rickers-Ovsiankina(16) and Schachtel(17) have discussed the emotional component of color in illuminating fashion. Subsequent studies have shown that color response may be impaired by neurotic inhibition(18, 19), paranoid evasiveness, depression(20), etc. Though these are functional disturbances we may, however, admit the possibility of such an impairment on an organic basis.

The neuropsychiatric literature reveals many reports of lesions, mostly tumors, of the base of the brain, involving, in particular, the diencephalic region, and producing affective psychoses that closely resemble phases of the endogenous manic-depressive psychosis(21-23). The number of similar observations is so great that the relationship is beyond coincidence. Others(24, 25) have

<sup>1</sup> Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1950.

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discovered that in handling the hypothalamus during operation manic states were elicited: conclusive proof that there exists some connection between the diencephalon and emotionality. Masserman(26) concludes from his experiments that it would "seem safest in the present state of our knowledge to assign to the hypothalamus its experimentally demonstrable rôle in reinforcing and coordinating the neural and hormonal mechanisms of emotional expression and reserve for adequate proof the hypothesis that it is either the dynamic source or the seat of experience of affective states."

#### LEVELS OF BRAIN LESIONS

1. Cortical & Sub-Cortical
2. Diencephalic
3. Extrapyramidal hyperkinetic type
4. " akinetie "

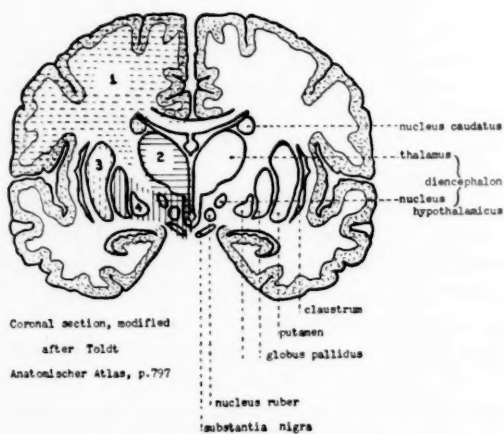


FIG. 1.—Levels of brain lesions.

It is the purpose of this paper to investigate further the rôle of the diencephalon in emotional expression by means of the Rorschach test.

Twenty-six cases of organic brain damage of different localization were selected first by careful neuropsychiatric examination and later substantiated by electroencephalogram and skull roentgenogram. The usual laboratory tests, including cerebrospinal fluid, were also carried out. They were then grouped according to the localization of the lesion, regardless of the etiology or psychological findings.

As shown in Fig. 1, 4 groups were established. The first group comprised 6 cases

of lesions located in or near the cerebral cortex but without sign of diencephalic involvement. Group 2 included 9 cases of established significant lesions of the diencephalon. Group 3 included 5 cases of lesions of the basal ganglia, hyperkinetic type, while the fourth group was composed of 6 cases of extrapyramidal lesions, akinetic type, 4 of them postencephalitic Parkinsonism. Some of the cases of this latter group showed, clinically, the known vegetative symptoms indicating involvement of the hypothalamic region. Thus, while we have classified our cases in 4 distinct groups, there is, in essence, some overlap of group 4 to group 2. Needless to say, since all our patients required commitment to a mental hospital they showed psychotic manifestations.

The intelligence of all patients was determined by administration of the Wechsler-Bellevue Adult Intelligence Scale(27) and the possibility of color-blindness was investigated by means of a color recognition test. These tests were conducted to ensure that the responses to the Rorschach test would be evaluated with reference to thoroughly appraised cases.

#### RESULTS

Because of required brevity we shall only attempt, on this occasion, to present our findings regarding the diencephalic group and to consider, in particular, the factor of color response.

These cases of diencephalic lesion (group 2), established by neurological and electroencephalographic evidence, when evaluated by the Rorschach revealed various specific differences from lesions of other localization; but most striking was the complete absence of color response. The "achromatic color" response followed a similar pattern. These findings indicate that the affective potentials of both elation and depression, as reflected in the Rorschach test, suffered some type of destruction.

All cases with damage in or near the cerebral cortex (group 1) gave color responses, as did those of our extrapyramidal, hyperkinetic group. Group 4, on the other hand, where involvement of the diencephalon is possible showed some cases with absence of color response. Thus we see that a dien-



cephalic lesion has a particular and destructive influence on the capacity to give color response.

The age range of group 2 was from 24 to 60 years of age with an average of 41.1. Thus, we have dealt only with adults.

An average IQ of 66.6 for the diencephalic group shows an intelligence within or near the level of mental deficiency. Actually, but one case of the 9 attained an IQ above 76. In view of this, it is all the more remarkable that the group gave no color response, for previous investigators have reported an increased color response—a child-like affectivity and lack of emotional control—among mental defectives (28-30). This lends further weight to our findings that with the diencephalic lesion there is a direct impairment of the color (affective) response.

It must be mentioned that 2 of our 9 cases in this group showed some inconsistency in correctly naming colors, but gave evidence that they were not color-blind. A third case was actually color-blind. However, Brosin and Fromm (19) have shown that there is no evidence of any distortion of the personality profile of the Rorschach in color-blind individuals.

The standard indexes of organic brain damage are conclusive for our diencephalic group. Ross' rating is heavily weighted to the organic, that is, disability scale with an average ratio of instability: disability of 17.1:28.8. Piotrowski's signs average 5.7, with but one case of the 9 not reaching the level of significance of 5 or more signs. Note too, that for this group one of the signs, color naming (Cn), is excluded as a possibility.

Six of our 9 cases of diencephalic lesion showed, at least clinically, only a lesion of one side, not always the dominant side, and yet the color response was entirely absent. Moreover, the lesions involved different parts of the diencephalon: in some cases, the thalamus, in some, the hypothalamus, and with differing intraregional position such that it is impossible, with our present knowledge, to state that there is a specific area of the diencephalon responsible for the loss of the capacity to give color responses on the Rorschach test.

In comparison of our 4 groups, we noted that the presence or absence of color response

was independent of the IQ, of the ability to recognize color, and of the presence of psychotic trends. Most peculiarly, the color response was absent even though changes of mood were clinically observable and unmistakable. We shall return to this latter finding in our discussion.

Not many cases of brain injury or lesion could be found in the literature that listed the raw data of the Rorschach and defined the localization of the lesion. Five cases (31-35) were reported where the lesion could be classified according to our first group. All gave color responses, particularly of the crude, impulsive, and confused type. These cases follow the findings observed in our cortical group. Thus, where the cortex, the seat of finer reason and control, has been damaged the emotional responses appear but without refinement.

But one case of reported diencephalic involvement could be found for comparison (35 (case I)). In this paper, Harrower-Erickson and Miale present a patient shown to have very superior intellectual preservation and an exceedingly well-developed mental control—a distinct contrast to our cases. Nevertheless, no color response, either chromatic or achromatic, was elicited.

Returning to the work of Harrower-Erickson on patients with variously located tumors of the brain (7), we may now suggest that at least in some of her cases, where no color response was obtained, the increased intracranial pressure was sufficient to cause involvement of the diencephalon, thereby disrupting this response process.

## DISCUSSION

Color response to the Rorschach has, empirically, been established beyond doubt to be related to the affective state of the individual. The observations and researches in the fields of neurology and psychiatry show conclusively that the diencephalon has a close relationship to emotionality. Our findings indicate that color, that is, affective response, is absent in the presence of such lesions. On the other hand, it cannot be said that such patients are without affect; indeed, they are quite subject to affective outbursts. What is the explanation of this paradox?

If color response is a sign of emotionality, as apparently it has been empirically established, then it would seem that the subject in giving color responses on the Rorschach test reacts to the emotional component of color as perceived (16, 17). We have seen that this component is distinct from mere color recognition. It seems that the capacity to experience this emotional component of color is missing, that is, destroyed, in cases with diencephalic lesion. In other conditions, both normal and abnormal, the presence of this component has been found to be consistent with the quality and degree of the individual's affective status. How else could the Rorschach factor of color response have established itself as a valid indicator of emotionality? Thus, with the exception of diencephalic lesions, this component *must* correlate highly with the total emotionality.

The loss of this capacity to perceive the emotional component of color is one of the finer and most distinct signs of a disturbance of emotionality with diencephalic lesion. Thus it follows that these cases must react in everyday life without awareness of this emotional component in their environment—a dynamic factor that would serve to accentuate any organic distortion of the affective state.

### SUMMARY

In summary, we have attempted to correlate the neuropsychiatric observations with our psychological investigations concerning emotional impairment with diencephalic lesions. The implications of the complete absence of color response to the Rorschach, in our 9 cases, were discussed in an attempt to lend further insight into the empirically long-established relation of color to affect.

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## COMMENTS ON THE PSYCHOPATHOLOGY OF CHILDREN WITH SOMATIC ILLNESS<sup>1</sup>

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That pain and illness, especially if intense, prolonged, or both, when associated with helplessness to relieve them may lead to progressively more severe anxious tension and panic, is a truism. That children at all ages, as well as adults, differ with respect to their total reaction in anticipation of, during, as well as after, the experience of pain and illness is also a matter of common clinical observation. Inquiry into the antecedents of such differences in reaction often tends toward a consideration of the relative importance of the factors of genetic endowment and of experience. It may then become the "nature versus nurture" problem, which has often enough been characterized as posing a false or misleading question. Nature and nurture are not easily separable, and clinical experience is often impressionistic and frequently enough scientifically in error. The statements in this discussion are not offered as supporting the sole importance of experience in the differences between persons in reaction to pain, nor in any way minimizing such congenital differences in the vigor of responsiveness to all inner or outer stimuli as have been observed and attested by students of the newborn. What is here intended is only to emphasize again, if it requires any emphasis, that postnatal, interpersonal experience from the earliest period of life with respect to pain is in many subtle ways an extremely important factor in what ensues in later behavior.

That infancy and early childhood are the period of life of greatest helplessness with least capacity for precise communication with others requires no proof. That the young child's needs, comfort, or pain are dependent for satisfaction or relief upon the parental,

perhaps especially the maternal, response is also evident. Experience in child psychiatry, which includes intensive therapeutic work with the parents as well as with the child, offers suggestive data about some of the obstacles to the adequacy of the parental response (from the point of view of the child's immediate need) that the child experiences. It is becoming more and more evident to more and more clinicians with such experience with both child and parents that the conflicts of each parent stemming from his early biography and the conflict between them are probably a ubiquitous concomitant of, and very probably a factor in determining, the severe and durable conflict and anxiety of the child, whatever his genetic endowment or impersonal disease.

An infant or young child in acute distress is relieved not only by prompt and adequate attention to its need or to the source of its pain. If its generalized tension (which is, generically at least, probably similar to later, clearly recognizable, anxiety or panic) has been aroused by the severity or duration of its discomfort or pain, it requires in addition obviously something more, which wise mothers intuitively offer. The firm bodily contact, the tender and gentle rocking and patting, the soothing, consoling voice, all express the freely flowing sympathy of the mother modulated fairly accurately to the increasing or subsiding general tension of the child, and are at the same time the specific remedy for the tension. Obviously, if the pain, illness, and general tension of the child continue to be severe, unrelieved, or recurrent, the first fully sympathetic response of even the most integrated parent may decrease. It may shade into fatigue, become tinged with some impatience, resentment, or anxious tension. These latter feelings are not only promptly reflected in the way the child is handled, but they are also responded to by the child with an increase in its tension to which the parent also reacts.

<sup>1</sup> Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1950.

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The turmoil in both parent and child may mount and continue until decisive steps are taken not only for the relief of the child's pain, if it still persists, but also of the parent's feelings. If such experiences should occur repeatedly and with considerable severity early in a child's life, their influence upon his reactions to pain and illness is not difficult to estimate. That its parent or parents may also be adversely affected and be progressively less confident and more uneasy toward the child's illness and anxiety is less often emphasized. The contribution of such attitudes in parents toward the particular child's later illnesses and to its more disintegrative behavior on such occasions may not be sufficiently recognized.

If such developments between a child and its parents may conceivably occur even in families in which neurotic conflict is minimal, or even absent, it is not surprising that children or even a particular child of parents psychologically less fortunate show greater readiness to disproportionate and paradoxical reactions to many situations and among them to pain and illness.

The factors that determine the *experience* of a child in connection with his pain and illness, whatever his genetic endowment of responsiveness, are many and interacting, at times mutually reinforcing or canceling each other and are always in a dynamic state of flux during his early life. The child psychiatrist has long been particularly interested in the personality of the mother, especially in any enduring conflicts originating in her own early life. Progressively he has become more interested in the self-attitudes of the father who, although he may have less time to spend in direct contact with the child in the nursery or early years, has been recognized as an important influence upon the child through his attitudes toward the mother and her reaction to him. Although the presence and influence of grandparents and other relatives, in our increasingly mobile American society, upon the parents and directly upon the child is quite inconstant, it may be in some instances important. The ordinal position of the child, which may be associated with differences in the amount and kind of his parents' experience with parenthood, is another factor. The child's sex, vigor, de-

velopmental rate, resemblance to parents or to other particular persons are variously important in the kind of attitudes toward him that these characteristics evoke in each of the parents or in other important adults and siblings in the home. The state of the adjustment, the degree of affection, and sexual satisfaction between the parents; their relative ages and their health during the child's early life, as well as the father's degree of achievement of status and economic security, are often of considerable immediate influence on the psychological atmosphere around the child.

All these factors are in a sense finally funnelled algebraically into the child's experience through the quality of total response of the particular adult caring for him during each episode of his pain after injury or during illness. If each of the previously enumerated factors is assumed in the simplest situation to affect or modify the mothering person's emotional reserve, state of conflict or balance, it may be simpler to consider the sequences of interaction (or, as it has been recently suggested (1-3), the "transactions") between the child and the important adult or adults, and some of the possible results.

The child psychiatrist, of course, has much less opportunity than the pediatrician to study more or less directly the child and parent and their mutual influence during the first  $2\frac{1}{2}$  to 3 years of the child's life, when the child's expressive and communicative modes are relatively nonverbal. Despite the growing conviction among students of childhood and of personality development of the great, if not crucial, importance of these first 2 to 3 years of life for the kind of later attitudes toward the self (*i.e.*, towards one's own impulses and sensations) and toward others, this period remains in a sense a "silent period" of the child's experience when it and its parents are seen later in the psychiatric clinic. Although the psychiatrist may be able to reconstruct the probable experience of child and parent in this "silent period" from the vivid recollections of the parent when the child is older; and although he may even see directly what the parent's and child's attitudes are during the course of treatment not only toward each other, but in the transference of each toward the re-

spective therapists (which he considers as substantiating evidence for his reconstructions), this remains for many less than direct and reliable data for a theoretical formulation about the processes during the earlier period of the child's life. Nevertheless, despite these reservations there may be some value in considering and summarizing some general sequences that seem probable on the basis of what clinical experience already exists. It needs to be emphasized that the sequences described below are abstractions from numerous specific clinical experiences, and hence subject to all the possible errors of all such generalizations as well as perhaps seeming to be relatively unsubstantiated hypotheses.

It has been previously stated that the prompt and adequate attention to the cause of the pain or illness as well as the uninhibited but modulated sympathy of the parent toward the child in acute pain or distress are probably characteristic of the emotionally relatively undisturbed parent-child relations. It has also been said that such interactions (transactions?) between child and parent are not only the most effective to relieve the general (anxious?) tension of the child, and perhaps preclude the development of more disorganizing panic-like tensions, but also tend to decrease the chances of the child's reacting with disproportionate tension to its later experiences of pain and illness.

It is in regard to both aspects that a parent in serious conflict with himself is in varying degrees and ways disabled. Whatever the parent's own experiences that contribute to the conflicting attitudes, there are, in the writer's experience, at least 3 general ways, or some combination of them, in which such a parent may react to his child's injury, pain, or illness. One of these might be characterized as the obsessional type of paralysis of feeling and behavior. A second way might be called the excessively anxious, oversolicitous, over identifying attitude that has often been more or less loosely called "hysterical." The third way is much more difficult to characterize briefly, but it might be said to be one of relative indifference. In a brief discussion such as this none of these three varieties can be exhaustively described.

In the first variety, the obsessional, the parent has difficulty in actually *feeling fully* in awareness any simple impulse whether positive, negative, or one of equanimity; whether affectionate, tender, and warm, or resentful and frankly angry; whether quite clearly frightened or contentedly satisfied. An automatic, rigid, although precarious, repression or defense against such feelings operates to preclude not only their emergence into awareness and discharge through action toward another person—in this instance toward the child—but also the anxiety associated with such deeper feelings. In their place there is either a curious void, emptiness, or "deadness" of feeling that is manifested overtly in some degree of paralysis in action or in reaction to events. There is usually also some substitutive distortion of the simple feelings into wry, half-gleeful, humorless mirth, into self-hateful depressive reaction with weariness, into peculiar affectless honesty and overprecise orderliness, and cold conscientiousness and much else characteristic of this type of solution of the conflict. In any case, the child in pain and tense may obtain some attention, even fairly adequate attention, although not always very promptly. His tension, however, evokes from the parent in extreme instances even more rigidity, coldness, and perhaps clumsiness in handling than usual, and this tension may spend itself to exhaustion in the earliest occasions. After some or many repetitions of such experiences with pain as well as with innumerable other issues in which there was no actual pain, injury, or illness, the frank overt expression of pain, of fear, of ready seeking of comfort from others may be driven underground, inhibited, and distorted. The child has, when older and more capable of comprehending words, perhaps often heard such comments as, "Now, now, it doesn't hurt *that* much!" or "Oh, it doesn't *hurt*!" or "You're a *big* boy now. You're not *afraid*, are you?" and so on, with corresponding attitudes that the child feels as deprecation, disgust, and cold ridicule of any marked manifestation of any intense affect. He tends to get pale, rigid, silently apprehensive, with quivering lip, which he struggles to keep stiff at the imminence of even minor pain, at the sight of others injured or in pain. He may even lose

consciousness in fainting on such occasions. Severe phobic reactions with near panic about cuts, bruises, sutures, contagion, germs and dirt, with ruminative withdrawal and sleeplessness or night terrors after days of such events may be common. There may eventually be evident fear and avoidance of physicians, little or no complaining or seeking of help. There may be denial or minimizing of pain and discomfort until almost prostrated by illness. There may even be some paradoxical aversion or suspicious reactions to sympathy, care, or comforting from others.

The overidentifying, oversolicitous, often frankly anxious parent—mother or father—is frequently full of apparently great sympathy for the child's discomfort and concern for his welfare. Discrimination and clear judgment by the parent as to either the extent of the injury or intensity of pain, the severity of the illness, or the degree of tension and fright of the child, are generally somewhat clouded. The errors tend to be in the direction of exaggeration. There is often readiness to accuse or suspect the other parent of indifference to, and lack of sympathy or intolerance for, the child's just needs and demands. There is equal readiness to feel anger toward this other parent or toward medical personnel who fail to be sufficiently impressed with the seriousness of the child's condition. Closer scrutiny generally reveals that behind this attitude there is great discontent with the self, a constant feeling of having been and being cheated, of being unloved and unlovable. There is a tendency to see in others, and particularly in the other parent, weary withdrawals of affection and warmth, if not actually to provoke such changes in the attitudes of others by excessive and insistent demands on them. The child may even be unconsciously a rival for the exclusive emotional attachment of the other parent. But on the occasion of his illness a parent may suddenly make common cause with the child and *for his sake* may feel justified in making even more insistent demands for attentive response from others, which is rarely fully or for long gratified or gratifiable. The child who, unless ill or injured, may experience relatively little spontaneous indulgence and generous warmth or easy

contentment with such a parent, suddenly gets something at least approaching sympathy, in any case, more affective response than at other times. He is offered more and longer affective showers than his actual pain or tension requires. Because of his otherwise ungratified and pent-up needs for contact, he clutches at this reaction, perpetuates it by rather hollow cries, enslaves the parent, and is enslaved by the parent's perhaps essentially egocentric reactions. Circular reactions in both child and parent continue, characterized by hidden resentful, revengeful, self-deceptive exaggerations and prolongations of these affective exchanges that are no longer very genuine, until fatigue supervenes or some sharp halt is called to what has become a tragic melodrama by the anger of a third person. Such interruptions may also come as relief to both partly because the pretense of pain in the one and sympathy in the other has become burdensome, and partly because the hidden rage finds outlet openly upon a clearly cruel and unsympathetically unjust "persecutor." The child, after numerous such experiences, tends at least in part to feel like such a parent and to identify unconsciously with these oversolicitous, overanxious attitudes and tends to use unwittingly the slightest injury, pain, or illness both as justification for release from all responsibility, as well as a bludgeon to coerce from others, if not genuine sympathy, at least some overdramatized anxiety and attentive response to his every whim. In the context of such experiences a positive urge to be ill, to gain such advantageous position with parents or other persons later in life may arise and become more or less fixed in the character of the child. This may emerge on occasions of difficulty of various sorts in which welcoming any sign of illness or pain may be inextricably interwoven with any visceral dysfunctions expressive of the actual anxious tension in reaction to the interpersonal problem. It is a part of this general attitude that has been called the regressive tendency characteristic of neurotic conflict.

The third variety of parental attitudes, previously unsatisfactorily called "the indifferent reaction," is not frequently observed as an uncomplicated overt attitude in clinical



work, nor is it possible to delineate it even as sharply as the first two. The frank rejection of a child by a parent collides with the very general attitude of most persons in our culture that one is a very bad, worthless, and "unnatural" person indeed if one does not have parental "love" for each and every child. The sanction of the law is behind this attitude to regulate and to fix within our society the responsibility for the care of the young. All these "oughts," "shoulds," and "musts" about loving and caring for the helpless young, not only to some extent inculcated in early life but also constantly reinforced, tend to confuse the parent and to increase, if not self-derogation for his lack of spontaneous affection for the child, at least the need to keep it hidden from frank expression to others. In addition to some persons who remain guiltlessly devoid of parental impulses, it is also a matter of common experience that many parents have little satisfaction with a particular child (or children) for a variety of reasons intrinsic and/or extrinsic to the child himself. The intrinsic reasons for such failure to develop spontaneous affection toward a particular child may be one or a combination of many. It may be his sex, his appearance, his general vigor, health, alertness, and so on. In any case, there is likely to be considerable guilt in the parent and even strong efforts to be just to the child as well as compensatory behavior that still lacks a genuine quality. In many such instances studied by the child psychiatrist the child basically has no illusions about the underlying attitude of the parent. He reacts in many ways that express clearly both his indifference to overtly stated wishes of his parents and often revengefully, although at the same time self-destructively, exploits their guilt. Some acts and attitudes of the child are almost shrewdly effective in exposing any pretenses or shams of the parent's denial of his underlying and actual feeling about the child. As far as illnesses and pain are concerned, psychiatric experience indicates that it is among such children that one often finds a greater readiness to such heedless activity that injury in accidents is frequent and repetitive. In some few instances of the more seriously disturbed children, even self-

mutilation occurs, and this is often chronologically closely related to another particularly disappointing experience with parents or other important adults. Whatever more or less unconscious and guilty impulses the parent may have had prior to the child's illness or injury to be freed of the unsatisfying burden of responsibility for the child, the possibility of its fruition in the child's illness intensifies the parent's guilt. This increased anxious tension of the parent partly gratifies the child's smouldering revengefulness and sense of injustice for what he feels has been a deprivation, and partly gives him some sense of greater affective contact with the parent even if it is not an altogether comfortable and soothing sort of contact. Again, some vicious circles of stronger affective exchanges between parent and child with more or less thinly disguised and compensated mutual hatefulness are intensified with the child's experience of pain and illness. The pain, injury, or illness becomes for the child a weapon, albeit a self-destructive one, of revenge against the parent as well as a solution to his situation that may be in some ways the lesser of two evils.

In none of these three generalized situations need there be, of course, any full awareness of all the actual attitudes described on the part of either child or parent, nor is it to be assumed that either parent or child acts with conscious deliberation. Further, since these varieties of parent-child situations are abstractions for the convenience of communication about them, no one of the varieties is likely to be found "in reality," in so-to-speak "pure culture." Human interpersonal dynamics are not easily describable in words, but present a kaleidoscopic continuum of variations in degree and quality. The different sequences and attitudes here separated for ease of description are all often present and to be found in varying amounts probably in most parent-child integrations.

There is a still further and very important qualification to be added. Attention has been paid chiefly to the *conflicting* portions or aspects of the child's and parent's attitudes and behavior. In most such problems there is also the integrative aspect in the personality attitudes of each. The quite simply protective, affectionately warm impulses of

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the parent are generally also there to which even the most disordered child reacts and integrates as well; else there would be no family that includes a child.

These latter tendencies in both are what might be called the psychological or emotional reserve—like the corresponding organ or physiological reserve of an organism affected with disease. The physician in psychiatry, as in somatic medicine, needs to estimate this integrative capacity as carefully as he does the degree and duration of the pathological, conflicting processes. It is often all the potential—what there is of it—for reducing or for overcoming the pathological conflict, for the return to whatever degree of emotional health may be possible in the child-parent relationship. It is here that not only the insight, experience, and knowledge of psychopathology of the physician are highly relevant for what ensues in the family crisis, but also and especially the physician's self-attitudes and their relative freedom from conflicts similar to those of his patients. Such conflicts, if present in the physician, may lead either to naive overoptimism or excessively pessimistic estimation of both the severity and nature of the conflict, and of the integrative potential of the child and

his parent. This will be expressed in his attitude toward both his patients and will in an important measure determine whether psychotherapeutic rapport will develop and what its outcome will be if it is established.

As one last comment the writer wishes to suggest that the circular conflicting processes that have been discussed fall in the general category of sadomasochistic distortion of human impulses. In other words, the particular combinations of events that affect the self-regard of parents in their life histories are here considered, together with the genetically determined endowments of the child and the impersonal etiological factors in his somatic illness, as the deciding elements in the transformation of the organismic reactions to pain into sadomasochistic modes of solving interpersonal conflict.

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# A PRELIMINARY REPORT ON THE USE OF D-DESOXYEPHEDRINE HYDROCHLORIDE IN THE STUDY OF PSYCHOPATHOLOGY AND PSYCHOTHERAPY <sup>1</sup>

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We would like to make a preliminary report on our psychiatric experience with the intravenous use of d-desoxyephedrine hydrochloride (Pervitin)<sup>2</sup> for a period of more than a year in a series of 22 cases.

The drug was first prepared in 1919 by Ogata. It came into general oral use as a stimulant on the continent, especially in Germany, shortly before the beginning of World War II. Its central euphoric and waking action without significant side effects made it superior to its related compounds, such as benzedrine. The undesirable side effects observed in those taking overdoses are essentially sleeplessness, perspiration, anorexia, palpitation, dryness of the mouth, dizziness, and occasionally headaches.

Limited EEG and ECG studies have been made without positive findings of significance. The major circulatory effect is pressor, the site of action being most probably peripheral. A decreased sensitivity to pain, apparently not due to psychic distractability but to action on peripheral nerve endings, was observed. In general, it has been assumed that hypertension, cardiopathy, thyrotoxicosis, and advanced age constitute contraindication to its use.

The drug was employed parenterally by British investigators (1) (Dodd and Prescott) in 1943 as a means of counteracting the severe hypotension following anesthesia or surgical shock. The rise in blood pressure was "plateau" in type, the duration of effect lasting from one half to several hours.

Simon and Taube (2) observed 5 patients with the aid of 15-20 mgm. doses of intravenous methedrine, and found it useful in making a diagnosis.

Levine *et al.* (3) reported on the psycho-

logic and physiologic effects of intravenous Pervitin in 75 psychiatric patients, most of them psychotics. They found that Pervitin produced a free flow of emotionally charged material, which included traumatic experiences, fantasies, and delusional ideas. A feeling of great relaxation was felt by most patients and mild depressions were often allayed. They were impressed with the superiority of Pervitin to benzedrine and sodium amylal in its psychic effects in that it allowed a more spontaneous and appropriate response in a state of full consciousness.

## OBSERVATIONS

Most of our patients were youthful veterans of the recent war and had been receiving psychotherapy for 2-3 years in our special clinic. In the main, they presented various somatic complaints, mood disturbances, and problems in interpersonal relationships. Although the overt symptoms were stimulated by their war experiences, it became increasingly clear that our patients had had psychologic difficulties long before the war.

Nosologically, most of our patients belonged in the group of the psychoneuroses. However, the clinical manifestations were often difficult to classify and brought up for consideration the possibilities of either schizophrenia or neurotic disturbances in schizoid personalities.

Our patients were screened by a careful history and physical and laboratory examinations for potentially significant cardiovascular abnormality. The usual period of verbatim recorded observation was an hour and a half. All patients continued to be observed for an additional 2-3 hours. Some patients were seen the following day. The usual dose of 40 mgms. was injected within 2-5 minutes. No antidotal measures have been necessary thus far in our series. Indeed on only 2

<sup>1</sup> From the Psychiatric Service of Dr. M. Ralph Kaufman, The Mount Sinai Hospital, New York City.

<sup>2</sup> Supplied through the courtesy of Smith, Kline & French, Inc., Philadelphia, Pa.

occasions was there significant transient precordial distress. In 2 instances, the expected rise in blood pressure did not take place.

The drug interviews were all conducted in the presence of at least 3 physicians who had had considerable contact with varying aspects of the case.

Our aims were: (1) attempts to make uncommunicative patients more accessible to therapy; (2) to illuminate focal matters or special problems; (3) to clarify the diagnosis; (4) to test this agent that seemed especially promising, as a tool for psychiatric observation and investigation.

It became apparent very early that the changes brought about by this drug facilitated especially well the observation of the dynamics of the case, and clarified the defense structure of the patient. Transference phenomena became more vivid. Within 2-10 minutes after the administration of the drug, nearly all patients exhibited a sense of profound relaxation; several reported a state of drowsiness. Others felt very light. One patient remarked, "I could just float up to the ceiling." In many instances, the relaxation and a state of well-being coexisted with apprehension, anxiety, and hyperacuity of thought.

With exception of one patient all began almost immediately after the injection to speak far more freely and rapidly than ever before. On nearly every occasion, material that had taken months to elicit was now made available within an hour, the subject matter being what is usually considered conscious or preconscious. This review of data, foreshortened in time and presented in a state of alertness and relaxation, has had a profound influence on the patients. Several of them remarked spontaneously that they began for the first time to gain a clear understanding of their problems. The following typical quotation illustrates this point:

*W. K.* When I was a boy, I used to pray that my parents should die so I would not be beaten. Then I thought I should die, since they had other children. I feel a bit emotionally choked up. I know I made these statements before. Now I guess I realize the full impact.

Most patients encountered difficulty in sleeping during the night following the in-

jection. This could be controlled partially by sedation. Our work was done in the evening, which was most probably an important factor in the degree of sleep disturbance. In our group, which consisted largely of ambulatory, actively working outpatients, we felt that the duration of wakefulness represented the most reliably measurable pharmacologic effect. In all our patients this did not appear to exceed 8-12 hours.

In several patients, a state of well-being, reduction or disappearance of symptoms, and a sustained increased interest, not only in outside activities but in the therapeutic work, lasted as long as 2 weeks. This undoubtedly was far beyond the pharmacological effects of the drug.

With the ease in verbalization, 5 patients who are stammerers lost their speech disability either completely or to a marked degree. The sudden change wrought by the drug struck the patients with the impact of complete surprise. It impressed them with the potentiality of symptom change at a moment of increased alertness, acuity, and highly charged affect. They were charged with confidence and hope by experiencing vividly their ability to be "normal again." Most patients underestimated by far the passage of time during our sessions. Several experienced changes in perception of the form and quality of objects.

In general, the impression was gained that mentation, noted by an arithmetical test, was improved. There have been, however, several exceptions and certainly this requires further study.

Although all patients complained of somatic symptoms, the only one that could be reproduced clearly, apparently as a result of the pressor effect of the drug, was headache. This occurred only in 2 patients who had focal headaches, pounding in type.

All patients have had, as a usual reaction to the Pervitin, a general sensation of tingling, accompanied or occasionally substituted by numbness. This has nearly always passed away after several minutes. We have, in addition, repeatedly observed an interesting phenomenon which we have called for the present a "re-awakening of focal memory." By this we mean the reappearance of the

same quality of tingling, at a time completely removed from the original reaction and sharply limited to a previously traumatized area, *e.g.*, scars of the body surface. Further investigation of these areas, heretofore silent, has shown them to have been highly charged emotionally. Two examples of many will be used to illustrate this briefly.

*S. A.*, subject to anxiety phenomena and a mood disturbance, experienced a marked tingling sensation in a scar on the right side of the neck after the general effect had worn off. This scarring was the result of a lymphadenectomy, fraught with fear, at the age of 5-6. Approximately 45 minutes later, while talking about fear of doctors, he again experienced a tingling, this time on the opposite side of the neck. It was only after this that he recalled, with some difficulty, that a small cyst, whose scar could now hardly be made out, had been removed from this area many years before.

*M. P.*, subject to headache and hyperirritability associated with pugnacity, developed paresthesias in a supraorbital and lower limb scar, the results of war wounds, while manifesting anxiety in relation to aggression. It was particularly noteworthy that he developed a similar phenomenon at the penile tip and crotch in the midst of anxiety-laden material concerning a sexual subject.

The number of patients studied thus far does not permit of any general valid opinion as to the lasting effects of this agent on the clinical course. However, it appears to have promise in this regard, and we hope to be able to evaluate this more critically in time.

### *Method of Delineating Defenses*

We have come to feel that this agent, in providing a rapid free-flowing verbalization, has made it possible to observe graphically and often dramatically the characteristic defenses of a given patient. We have thus far had the opportunity to study only a few patients in more than one interview, and at intervals of several months. In these, the essential defense tendencies remained constant. The study of defenses is axiomatic for psychopathological research and scientific psychotherapy. It is not our aim at the present time to discuss the interrelationships between defense mechanisms and symptom formation. We are rather concentrating now on the observation of reactions to stress.

Patients tend to maintain characteristic modes of defenses and these generally determine the clinical picture. The Pervitin

interviews, covering large segments of the patient's clinical history, afforded us an opportunity to study the emergence of defenses at close hand and in a circumscribed period of time.

We are now chiefly concerned with an analysis of the methods of defense utilized by the individual patients in the stress situation of the interview. The protective phenomena were related in different patients to precipitant factors, which included current psychic tensions as such, reactions to the experiment, and especially the disturbed equilibrium brought about by the disappearance, as the result of the drug, of a clearly observed persistent and characteristic defense, *e.g.*, smiling. The following clinical data will illustrate the latter.

*J. N.* is a 31-year-old married veteran who came to the clinic in 1946 with difficulties of adjustment at home and at work. He attributed these partly to his stammering, present since childhood. A broad and persistent smile became the most striking feature of his appearance. His early years were traumatic ones because of the mental illness of his mother whose institutionalization led to the dissolution of the home. Following a minor shrapnel wound in his ankles he developed neurotic symptoms leading to his discharge.

It was evident that in this patient the smile, which was never accompanied by an elation, was a protection against an anticipated ridicule, especially related to his stammering. It served as a disarming passive counteraggression. The patient stated: "I used to smile whenever I got into trouble . . . my smiling isn't because of nervousness. I can't explain it . . . everytime I want to [start talking], I laugh about it because I want people to know that I know it. I don't mind them laughing at me."

This patient had two Pervitin interviews about one year apart. The disappearance of the smile was dramatically abrupt in both. His expression immediately became sober and resembled that of a depression. On several occasions, when the smile did return, it was in response to appropriate stimuli. There were marked improvement or, for long periods, complete disappearance of his speech disability. At moments of heightened emotional tension, his stammering returned. However, it no longer was accompanied by the defensive smile.

The loss of this fixed defense in the nature of a disarming smile brought forth material that, on analysis, could best be characterized as a search for new protective measures, which could not crystallize into a sustained specific defense. An inhibitory tendency came into play. Not only did he become guarded and hesitant, but at times he showed a discontinuity of thought that resembled incoherence. There was an alternation between blankness of mind with accompanying inability to

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concentrate, and a free-flowing verbalization. At moments he became openly aggressive in his remarks.

The second experiment after almost a year of therapy did not bring out to the same degree the display of shifting, partial defenses, even though the disarming smile disappeared as quickly as before. His behavior corresponded to the amelioration in his clinical picture.

Another patient, *M. L.*, whose ingratiating smile disappeared under Pervitin demonstrated more clearly the emergence of fleeting defensive measures. They included an inhibitory trend with a sensation of a presleep state, dependency, and somatization. Here too, the display of partial and shifting self-protective reactions characterized the potentialities and limitations of the patient's personality.

The following patient illustrates the maneuverability of even very highly resistant defenses:

*D. N.* is a 32-year-old married veteran, subject to severe left frontotemporal headache. He saw combat service but was not wounded.

Under therapy, it became apparent that this patient who had undergone a great deal of physical abuse and maltreatment had become incapable of expressing his resentment. Indeed, his attitude was fixedly that of extreme compliance and ingratiation.

His never-absent ingratiating smile disappeared 2-3 minutes after the injection. An excruciating, sharply localized headache appeared immediately, having the identical but highly intensified character of his chief complaint. This was associated with extreme anxiety and restlessness, interspersed with loud, insistent pleas for food. Thus, a regressive phenomenon came to the fore. He continued to express dramatically aggressive ideas first toward himself, and then toward others. "I wish you would kill me. . . . I feel like killing somebody."

Therefore, the usual mode of reactions, his extreme compliance and ingratiating smile, gave way under the drug. He, as the others noted above, could not crystallize out any other specific and lasting defense. The oral regression was only fleeting. Anxiety and labile aggression dominated the picture and were utilized in an abreactive way.

The drug produced in the first 2-3 minutes what had not been possible to achieve in over a year of diligent psychotherapy. For 1-2 weeks thereafter, patient experienced great relaxation, and a "strange" relief. The break in the frozen defense gave a tremendous impetus to abreaction.

On the other hand, the following patient was able to maintain his characteristic single defense, in the face of both a radical change in mood and a restored feeling of adequacy and power.

*J. K.* is a 29-year-old married Negro veteran with the chief complaints of sexual impotence, a feeling of weakness, and stuttering. He had been

a highly successful professional prize-fighter for several years and had sustained no injuries. His potency difficulty started while on furlough home and has remained the most disturbing symptom. Concurrently, he has been unable to resume his profession as prize fighter.

The patient, who is always a reserved, well-contained individual, showed a radical transformation shortly after the first injection. He complimented and then attempted to make advances to a female and then a male observer. He was, however, easily restrained. Simultaneously, anxiety developed. He tried hard to defend himself by self-reassurance as to the professional character of the group, and as to his own code of ethics. Subsequent material continued in the vein of remorse, and along the line of inhibition of aggression. The second Pervitin interview, conducted 5 months later, brought out a feeling of buoyancy and a recrudescence of his former physical powers. In spite of this, there was no evidence of the previous overt amorous behavior shown in the first interview. Indeed, he apologized continuously for it.

The patient's essential defense in his neurosis has been an inhibition (sexual impotence and aggressive impotence, *i.e.*, inability to fight). Under the influence of Pervitin, *only* the identical defense mechanism came into play, *i.e.* inhibition of aggression. This was a graphic, objective, concentrated demonstration, foreshortened in time, of patient's chief single mode of defense. It is worth noting that though the drug influenced markedly his speech impairment, it left the main defense untouched.

On the contrary, the following patient illustrates the emergence of several well-crystallized defensive measures:

*M. P.* is a 25-year-old veteran, subject to headache and temper outbursts. He had close-quarter active combat as a ranger and had killed many of the enemy. He, himself, was wounded in the thighs, the head, and elsewhere.

The therapy revolved about the patient's handling of his aggression as he was constantly and easily provoked into fights. He remained, however, in a very fearful passive attitude toward his father and in a dependent son-like relationship toward his wife. The picture was thus of a submissive person under tension with outbursts of violence. Patient made a definite improvement. The headaches became much less severe and his interpersonal relationships at home and at work approached a normal level.

This patient had 3 Pervitin interviews within 6 months' time. There was an initial chest constriction in all 3, especially marked in the last. The third experiment, which was associated with much more severe chest pain, brought out spontaneous imagery of a bayonet attack, of which he said, "Suddenly, I can't protect myself." In this most recent interview, the nature of the patient's remarks, especially when compared with material elicited in the first 2, demonstrated clearly the

emergence of a fear of an attack on his passive self, a probable transference phenomenon. The dominant defense was an identification with the aggressive father in which he stressed his masculinity and devotion to his wife.

It is interesting to note that, in the first therapeutic group session after the second injection, he maintained the same theme, that of bolstering his masculine aggressiveness, citing exploits in which he defended women against powerful intruders. An auxiliary defense during each observation was strong denial. This was especially dramatized in the third experiment where the patient was able to maintain a mood of exhilaration despite disturbing material. An increase in anxiety was often accompanied characteristically by a striking oscillation from a homosexual to a heterosexual orientation. It is remarkable that his main complaint, a headache, did not appear in the content of any of his interviews.

Patient stated spontaneously after the second injection that, although he had been in psychotherapy for 2 years, he had gained no insight until after the first Pervitin injection.

#### COMMENT

Originally, D-desoxyephedrine has been used abroad in oral form primarily to increase work efficiency, to maintain wakefulness, and to elevate the mood. Myerson(4) used this drug to advantage in conjunction with sodium amyltal for the treatment of 2 cases of amnesia.

In its parenteral form, it has been utilized chiefly by surgeons as a pressor agent during anesthesia and shock, where its chief advantage lay in the production of a relatively and plateau-like sustained hypertensive level.

We have been able to confirm in essence the observations by Levine *et al.* of facilitation of verbalization and relaxation of tension following intravenous Pervitin. But we wish to note that the blood pressure elevation did not generally last beyond the first 3 hours. In 2 instances there was no significant rise at all despite the injection of 40 mgms. of the drug. This dosage has seemed safe and optimal for producing effective results.

Our observations led us to believe that this agent possessed even greater investigative and therapeutic potentialities. The uninhibited verbalization in the presence of an alert state of mind, covering large areas of the patient's ideas, experiences, and affects within a delimited space of time, provided an unusual opportunity to study psychopatho-

logical elements. The juxtaposition of ideas and affects possible under these circumstances proved to be of diagnostic and therapeutic importance.

The immediate therapeutic effect in most of our patients was a salutary one. This went beyond the direct pharmacological action of the drug. The dramatic changes that generally occurred were clearly perceived by the patients, and instilled in these chronically ill people new confidence in themselves and the therapist. More importantly, previously gained understanding became fortified and enriched with more affect. In several instances, this effect was noted for as long as 2 weeks subsequent to the injection. However, the problems of long-lasting influence and the proper spacing of Pervitin interviews need long-term studies, now in progress.

The drug was diagnostically helpful in resolving questions of psychotic involvement in cases considered "border-line." This permitted a much greater latitude in subsequent psychotherapeutic interventions. It produced no serious repercussions in our most unstable patients.

This agent provides an efficient method of following dynamic mechanisms of psychopathology, and thus affords research possibilities. The defenses of an individual and the manner in which they are employed constitute the essential core of the structure of a psychic illness or character, and play a major role in the therapeutic process. The contiguity and continuity of the compressed material afford an unusual opportunity for a study of the emergence and use of the patients' defenses. In the cases reported, the contrast between patients using one defense primarily and those employing several was very illuminating. In addition, the varying lability of the defense structure as evidenced by the rapid shifting from one to the other was very instructive. It should be noted that a valid picture of the defenses studied in this manner requires a thorough knowledge of the clinical course, and an intensive review of the verbatim transcripts, preferably of more than one interview.

Transference phenomena tended to appear in unusually clear form, and when interpreted were easily perceived by the patients. The

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drug undoubtedly contributed to this facilitation of response.

Used thus, the drug affords excellent opportunities for demonstration and teaching. It also provides a medium for evaluating progress. The interviews were most often carried out in the presence of several staff members of both sexes without interfering with the patient's flow of thought and even at times high-lighting the clear and rapid interplay of defenses.

We have observed interesting sensory phenomena produced by the drug. Among these is a decrease in the patient's sensitivity to pain. This has been noted before by Levine and studied by others(5), who have considered this action to be a peripheral one. Thus far, we have noted this change only in relation to surface areas. We are not certain of any changes in the deeper tissues. Some evidence suggested that the muscular ache consequent to a trauma was unaffected as compared to similar muscular aches secondary to tension states.

We have observed repeatedly still another type of sensory phenomenon which we have referred to as "awakening of focal memory." This has been applied to the return at stressful moments of paresthetic phenomena to traumatized surface areas that have remained previously silent for long periods. We have not thus far encountered this in relation to previous visceral traumata. It has seemed to us to offer a promising means of studying objectively phenomena involved in the concept of psychic representation. As such, it has important theoretical implications.

#### SUMMARY

1. D-desoxyephedrine hydrochloride was employed intravenously in an intensive study of 22 patients with psychoneurotic illness.

2. It was found invaluable as a working tool for—

- (a) the delineation of defenses available to the patient, and the role of this delineation in diagnosis and research.
- (b) a nosological differentiation in so-called "border-line" syndromes.
- (c) the vivid clarification of transference reactions.
- (d) the unexpected confrontation of the alert patient with a dramatic change in his chronic symptoms, and its consequent impetus toward recovery.
- (e) the marked reduction in time consumed in obtaining valuable conscious and preconscious material.

3. A repeated phenomenon, which we have labeled "reawakening of focal memory," has been frequently observed, and represents a challenge to the study of recall, and psychic representation.

4. It allows for clearly observable phenomena even in the presence of a group, and thus affords an excellent medium for teaching purposes.

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## HALLUCINATIONS IN MIGRAINE

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This article describes 2 hitherto unrecorded varieties of hallucinations that occur in migraine.

These hallucinations occur in persons suffering from classic migraine headaches as well as in migrainoids (the children of persons afflicted with classic migraine). The cases presented here have all had classic migraine headaches. To conserve space only 1 or 2 cases of each kind are described in the patient's own words.

I. *Space-motion hallucinations* that occur most frequently during the period of relaxation preceding sleep.

### A. "The earthquake."

Mrs. M. B., age 30, housewife: "I have had this sensation for about 7 years. It occurs 2 or 3 times a week. Sometimes when I am reading in bed I suddenly feel what seems to be an earthquake shock, which sets the room, the bed, and me, shaking violently. The shaking continues for about half a minute, fades to a vibration and gradually diminishes until once more there is no feeling of motion. I always have a feeling of puzzlement when I cannot actually see any evidence that the shaking is taking place. The draperies and the chandelier remain stationary. The first few times it happened, I wakened my husband. He declared he could feel nothing; yet all the time he was speaking I could feel the motion. After that I learned to check on myself by hanging a stocking over the back of a chair next to the bed. If, in the midst of the shock I cannot see the stocking sway, I know the earthquake is an illusion. I occasionally have this same feeling during the day, usually when I sit down to relax."

Mr. K. M., age 61, author: "Not infrequently when tired, or when having a little difficulty going to sleep I have a shaking sensation while lying in bed. The shock movement may be comparatively gentle, on occasion it is attended with some violence. . . ."

### B. *Impressions of various motions of the bed.*

Mrs. M. C., age 49, housewife (excerpt of letter of September 8, 1949, after driving

several hundred miles): "When I went to bed Tuesday night I was very tired, and after I had relaxed, felt for the first time in 2 years the sensation of sinking into the bed far deeper than any bed could be. I was enjoying this lovely, soft sensation when the bed tilted gently to about a 45° angle toward my husband, which surprised me so, I opened my eyes, and everything came back to normal. But when I closed them the bed tipped the other way. At neither time did either of us slip over onto the other, but just lay comfortably on an angle."

II. *Space-motion hallucinations: sensations of acceleration involving the entire body.*

### A. *Sensations of acceleration while resting in bed.*

Miss W. A., age 33, law student: "Once or twice when I went to bed very tired, just before falling asleep, I would suddenly find myself rushing through space. Not the body, necessarily, but the part that feels motion. It's the feeling you get when you sit in a speeding car and close your eyes. The motion was sideways and was so fast that it can't be described—'rocket-like' comes closest to it. I don't remember the starting or stopping, and it lasted only seconds."

B. *Sensations of acceleration during the normal activities of the day.* (Note: The following description is a combination of space-motion hallucination, and hallucination of body image.<sup>1</sup>)

Mrs. M. M., age 29, court reporter (excerpt from letter written in October, 1942): "As I came out of the building and proceeded down the street I suddenly had the feeling that my head was suspended on an invisible wire, and was being pulled along from up above at a rapid pace. I had the feeling, also, that in order to keep my body under my head so that it wouldn't go flying away from me, I was running to keep it balanced where it belonged. In fact, I *felt* that I was running; yet in looking at my reflection in a shop

<sup>1</sup> See article, "Certain Hallucinations Peculiar to Migraine," to appear in J. Nerv. & Ment. Dis.



window I noted that I was really walking down the street in my usual leisurely fashion."

Mr. S. S., age 30, house painter: "Often when I relax in a chair, the chair and I seem to be sinking through a hole in the floor. I know it isn't true, but it's very annoying."

*C. Disturbances while walking.*

Mr. M. K., age 60, newspaperman: "I have occasionally, and usually while abstracted, while walking on the street, become gradually aware that my feet in some odd way or another have definitely left the ground, and that I was, literally, 'walking on air,' which, while it had some solidity, had also a definite spongy or rubbery feeling that supported weight. At such times the whole body has a definite feeling of lightness. My impression is that my feet are never more than a few inches off the ground."

Mr. D. M., age 38, real estate broker: "The sensation of the tilting sidewalk has two phases. The most usual is the feeling that the left-hand side of an ordinary level floor or sidewalk gradually rises until I am forced to walk diagonally to keep my footing, and in extreme cases, compels me far to the right-hand side."

*D. The "slow motion hallucination."*

Mrs. H. Y., age 32, newspaper woman: "A number of hours before my headache attacks, or sometimes not followed by a headache, I have a sensation of 'slowing down.' All my motions seem very slow. I try to move faster, and seem to move even more slowly. At the same time, everything around me seems to move very fast."

*E. The "dead weight" hallucination.*

Miss E. S., age 40, writer: "At infrequent intervals while walking I have a feeling as if a rope were attached between my legs, pulling me down into the ground. At other times I have a feeling of being near to the ground, squashed down, my whole body mashed."

III. "Phantom impressions"; generally described as "a feeling of presence" or "a sense of something or someone being present."

*A. Impressions associated with perception of movement at the edge of the visual field.*

Mrs. C. R., age 53, newspaper editor: "... I have suffered intermittently with migraine headaches from my early twenties. At 45 my headaches were weekly and very severe, accompanied by visual symptoms, such as (apparently) seeing a 'mouse' which flicked along the floor just outside the field of vision. The mouse was an impression of *being*, rather than an actual visualization. It was an impression which haunted me between headaches as well as immediately preceding them. While reading copy I would sneak a frequent glance to the right to see if I could actually see the mouse."

Mrs. J. M., age 34, housewife: "I spend an hour a day practicing on the pipe organ. The organ loft is located upstairs in the rear of the church, and I sit with my back to the pews. Frequently my playing is interrupted by a flicker of white at the extreme right-hand edge of vision. I stop playing, turn around, and look down to see who is moving in the church. For a few seconds, I have the impression that *someone* dressed in white is downstairs, even though I can see nothing out of the ordinary."

*B. Awareness of the presence of certain "living beings."*

Mrs. H. H., age 32, housewife: "One or two hours before my headache I have a sensation outside of me, perhaps 2 feet from the right side of my body, in front of me. It is as if there were a whirling, speeding 'something'—like a real machine—something fast. This lasts about 20 minutes, and while it lasts I have a feeling of fear or oppression. Sometimes it feels as if 'it' were a malignant presence. This occurs only preceding the headache."

Mrs. C. L., age 37, housewife: "About 3 times in the last 4 years as I walked through my darkened dining room, I had the distinct feeling that there was a bear under the table. Of course, I couldn't see anything or hear anything there, but for fully a minute I *knew* it was a bear. I felt no fear, and only a little mild surprise, as though it were something which had happened before. The funny thing is, I had the distinct feeling that the 'bear' felt the same way I did! So far as I can remember, this sensation had no connection with any headache."

Mrs. W. C., age 53, office manager: ". . . Since childhood, just before going to sleep, I have the feeling there is a boa constrictor against the wall. He is 10 feet long and 1 foot thick. He's just as real to me as if I actually could see him. If I turn on the light he is not there, but he returns with the darkness. There is no fear with this feeling, just mild interest. It is always a boa constrictor and nothing else. Sometimes I wake up in the morning knowing that he is in the room. . . . I lie there for a minute, sensing him

right under the window. After a little while he slithers out through the window and is gone. . . . Occasionally it will begin as a dream, when I am asleep, and carry on into the waking state."

We see in this last case that hallucinations may begin in sleep and carry over into the waking state. Likewise, many patients feel the pain of a severe headache before they awaken.

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## PSYCHIATRIC AIDE SELECTION THROUGH PSYCHOLOGICAL EXAMINATIONS

### A PRELIMINARY REPORT OF THE SCREENING OF APPLICANTS AT THE ARKANSAS STATE HOSPITAL

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#### INTRODUCTION

Although most hospitals have for many years made every effort to determine the physical competency of the employee applicants before accepting them into their organizations, little or nothing has been done to determine the mental competency of applicants before they are placed on duty. This situation has existed in spite of the fact that it has long been recognized that many individuals seeking hospital employment are both intellectually and emotionally unsuited for work in mental hospitals and may actually endanger their own mental health, as well as the health and welfare of the patients under their supervision. Recognizing these facts and realizing the loss both financially and therapeutically through the employment of such unsuitable individuals, the Arkansas State Hospital, in March of 1949, established definite standards of intelligence and emotional stability for all psychiatric aide positions in the professional service.

#### TECHNIQUE

In order to establish the necessary norms and to select suitable psychological tests for this selection program, it was necessary to administer psychological examinations to all psychiatric aides then on duty, as well as new applicants. It was found that many employees then on duty were actually of defective mentality and that the personality makeup of many others was unstable and unsuitable for such employment. Some of these people suffered from psychopathic personalities; others showed schizophrenic personality patterns, and many other personality disturbances were revealed. It was then decided that the screening program had to be so designed as to eliminate applicants of defective mentality and, in addition, prevent

persons suffering from paranoia, schizophrenia, psychopathic personality, and other personality deviations from entering the ranks of hospital employees working with mentally sick patients.

The program has consisted principally of the use of two psychological examinations that are easily administered and scored. The Otis Quick Scoring Mental Ability Test, Beta Form, was utilized in the measurement of intelligence during the year 1949 and has been replaced by the California Capacity Questionnaire, which is currently used. The Minnesota Multiphasic Personality Inventory is utilized in the personality evaluation. In special cases, the Rorschach and the Wechsler-Bellevue Intelligence Scale are utilized. This selection program is handled by the staff psychologist. Applicants are referred by the personnel officer and are examined one day each week in small groups of approximately 10 and not exceeding 20 applicants. These applicants begin their examinations at 8:00 o'clock in the morning and are usually finished with this procedure within 2 or 3 hours. It usually takes about 2 hours to score and evaluate the results of these tests. In 1949, 700 applicants and employees were examined at a cost of approximately \$1.50 each. This cost included the professional services of the psychologist, as well as the cost of the test material.

We have evidence to prove that this program has been successful from a financial standpoint, for it has caused a marked decrease in the turnover rate within the psychiatric aide group and has eliminated a great deal of replacement processing and retraining. There is also an observable improvement in the type of patient care, although we have not as yet evolved an objective method of correlating patient care with employee efficiency and selection. The purpose

of this report is to compare the results obtained on these two simple psychological tests with the efficiency of 100 psychiatric aides at the Arkansas State Hospital. The factors of age and education are also correlated with the efficiency of this test group.

#### PROCEDURE

One hundred psychiatric aides, 50 males and 50 females, were randomly selected from some 515 employees of the hospital in July, 1949. The Otis Quick Scoring Intelligence Test, Beta Form, was initially administered and was followed by the Minnesota Multiphasic Personality Inventory. At the end of 6 months, each aide was rated according to his performance or efficiency.

procedure are pointed out here, in order to clarify any doubt in the mind of the reader as to its validity.

#### RESULTS AND DISCUSSION

*Intelligence Factor.*—The Otis test scores for this population were found to be approximately 10 points lower than scores obtained by the same population on the Wechsler-Bellevue Intelligence Scale. Table 1 shows a comparison of intelligence classification with the efficiency ratings of the 100 employees in our test group. We have reported only the figures for the "Above Average" efficiency and the "Below Average" efficiency group, omitting those in the "Average" group, which may be easily determined

TABLE 1

"ABOVE" AND "BELOW AVERAGE" EFFICIENCY RATINGS COMPARED WITH INTELLIGENCE QUOTIENTS\*  
OF 100 PSYCHIATRIC AIDES AT THE ARKANSAS STATE HOSPITAL

Intelligence classification	Distribution			Below average in efficiency						Above average in efficiency					
	Males	Females	Total	Males		Females		Total		Males		Females		Total	
				N	%	N	%	N	%	N	%	N	%	N	%
High average..	6	10	16	2	33	3	30	5	31	0	0	1	10	1	6
Low average..	13	9	22	3	23	3	33	6	27	4	31	1	11	5	23
Dull normal..	7	15	22	0	0	1	6	1	4½	1	14	0	0	1	4½
Borderline ...	16	9	25	4	25	1	11	5	20	3	19	1	11	4	16
Defective ....	8	7	15	3	37	3	43	6	40	0	0	1	14	1	7
Totals ...	50	50	100	12	24	11	22	23	23	8	16	4	8	12	12

\* Intelligence Quotients were determined by the Otis Quick Scoring Intelligence Test, Beta Form.

The efficiency rating scale consisted of 10 items covering quality of work, attitude, quantity of work, dependability, emotional stability, safety, and care of equipment. Each of the 10 items received either an A, B, or C, depending on how the aide measured up to the ideal. Each aide received a rating of either Excellent, Very Good, Good, Fair, or Unsatisfactory. The average employee received a rating of Good, so that a rating of Fair or Unsatisfactory was considered "Below Average," while Very Good or Excellent was considered "Above Average." The hospital ward supervisor rated each aide in his unit. The rating was then reviewed by the nurse supervisor and the physician in charge of the ward. Each aide was given notice of his rating, at which time he could appeal to a committee, with adequate representation from his own department, if he felt the rating to be unjust. The details of the rating

by an inspection of the chart. We have attempted to avoid reporting unnecessary statistics. The practical purpose of working out the percentages in Table 1 is to find the level of intelligence of the most efficient psychiatric aides. However, in finding this, we must be concerned also with the level of intelligence of the least efficient aides. Only 4½% of those classified dull normal (Otis scores, 80-89) in intelligence received "Below Average" efficiency ratings. A greater percentage of aides with "Above Average" efficiency ratings were found to have intelligence ratings in the low average range (Otis scores, 90-99). Of the aides in this range 23% were rated "Above Average" in efficiency. However, another 27% of the aides in the same range were "Below Average" in efficiency. It would seem, then, that we must select a group that involves the least amount of risk possible. Our attention is



then focused on the dull normal group. Although only 4½% of this group were "Above Average" in efficiency, only 4½% were "Below Average" in efficiency. Obviously then, the remaining 91% of this group received efficiency ratings of "Average."

Reliability of small samples is always questioned. However, there is a very positive correlation between the efficiency ratings received by the males and those received by the females in our test group. For example, 33% of the males in the high average intelligence range were "Below Average" in efficiency and 31% of the females in the same

ing on duty, drinking, etc. This indicates the necessity for a very thorough personality study of all applicants, especially of those with intelligence ratings in the high average range. The causes for the inefficiency of the more intelligent aide are two-fold: first, maladjustments within the personality of the individual and, second, working conditions, which are further discussed below.

Of course, intelligence is only one factor in the over-all picture. Looking at the picture of productivity and employee efficiency is like viewing the designs of a kaleidoscope; no one pattern dominates every scene. The factors of age, education, and personality adjustment should also be considered, thus justifying the following discussion.

TABLE 2

EFFICIENCY RATINGS OF 38 PSYCHIATRIC AIDES  
CLASSIFIED AS AVERAGE OR ABOVE IN  
INTELLIGENCE

	N	%
(A) "Above Average" efficiency.....	6	16
(B) "Average" efficiency .....	21	55
(C) "Below Average" efficiency		
(1) Discharged		
(a) Sleeping on duty..	1	..
(b) Excessive		
absenteeism ....	5	..
(c) Using drugs .....	1	..
(d) Drinking on duty.	1	..
(2) Still on duty		
(a) Lack of ambition		
and initiative ...	2	..
(b) Failed to carry		
out procedures		
outlined .....	1	..
	11	29
Total .....	38	

intelligence range were "Below Average" in efficiency. This correlation between the 2 groups substantiates the reliability of our sample.

Thirty-eight of the 100 aides were classified average or above in intelligence (Otis scores of 90 and above). In attempting to find the cause for the high percentage of aides in this group who were rated "Below Average" in efficiency, we have listed in Table 2 the ratings received by this group, along with reasons for the "Below Average" efficiency ratings. Eleven of this group, or 29%, were rated "Below Average" in efficiency. Eight of these have been discharged, as indicated above, for reasons such as sleep-

TABLE 3

AGE OF 100 PSYCHIATRIC AIDES AT THE ARKANSAS  
STATE HOSPITAL COMPARED WITH EFFICIENCY

Age	N	Below average efficiency		Above average efficiency	
		N	%	N	%
55-59 .....	2	..	..	..	..
50-54 .....	3	1	33	..	..
45-49 .....	8	1	13	3	38
40-44 .....	6	2	33	1	17
35-39 .....	15	3	20	1	7
30-34 .....	25	6	24	5	20
25-29 .....	28	6	21	2	7
20-24 .....	13	4	31	0	0
	100	23		12	

*Age and Efficiency.*—Table 3 shows the age distribution for the 100 aides and the corresponding efficiency rating for each group. The percent of "Below Average" aides decreases with increase in age, according to our study, at least up to the 49-year level. The highest percentage of "Above Average" employees was found in the 45-49 year group, and in this group we found fewer "Below Average" aides. However, aides in this age group have been employees of the hospital for a number of years, and their efficiency doubtless stems from their experience, and not simply from the fact that they are 45 to 49 years of age. In the 20-24 year group, we found that 31% were "Below Average" in efficiency, with none receiving "Above Average" efficiency ratings; and of course the remaining 69% of this group were "Average" psychiatric aides.

*Education and Efficiency.*—It appears from Table 4 that the aide with a tenth grade education is the best "risk" in the present setup in regard to the position of the psychiatric aide in our hospital. While only one out of 18 of this group was rated "Above Average," it is also noted that only 2 were "Below Average" in efficiency. Aides with eleventh and twelfth grade education proved to be less efficient as compared with those having a tenth grade education. The lack of opportunity for personal advancement and training has accounted to a great extent for this inefficiency of the more intelligent and better educated aide. The duties of the psychiatric aide in this hospital have been

TABLE 4

EDUCATION OF 100 PSYCHIATRIC AIDES AT THE  
ARKANSAS STATE HOSPITAL COMPARED  
WITH EFFICIENCY

Grade finished	N	Below average efficiency		Above average efficiency	
		N	%	N	%
12 .....	23	7	30	4	17
11 .....	14	4	29	2	14
10 .....	18	2	11	1	6
9 .....	16	3	18	2	12
8 .....	21	5	24	2	9
7 .....	3	0	0	0	0
6 .....	1	0	0	0	0
5 .....	3	1	33	1	33
4 .....	1	1	100	0	0
100					

of a very routine nature and self-expression and initiative have been thwarted. This is one of the problems our 3-year School of Psychiatric Technology, which was inaugurated at the Arkansas State Hospital in 1949, is designed to deal with. The aide will be trained so as to understand better the patients on his ward; he will be encouraged to make suggestions and to keep progress notes on each patient. This will encourage him to feel that he is making a more definite contribution to the therapeutic program and in turn will encourage applicants of higher intelligence with more stable personalities to enter the field of the psychiatric aide.

*Personality and Efficiency.*—Table 5 compares the Minnesota Multiphasic Personality Inventory profiles and efficiency of our test group. The first column in each of the 9

categories is the distribution of weighted scores obtained on the Inventory. The "B.A." column lists those in each bracket who were "Below Average" and the "A.A." column lists those who were "Above Average" in efficiency. Our attention is focused on the Psychopathic Deviate scale, in which we find that 40% of those aides with weighted scores above the standard deviation (10 in number) were "Below Average" in efficiency, with none rated "Above Average" in efficiency. The Psychopathic Deviate scale shows a positive correlation with efficiency, with fewer "Below Average" aides at the norm, with the greatest percentage of "Above Average" aides at the norm. However, as we turn to the other categories, we find a different picture. Taking the first category (Hypochondriasis), we find that 2 persons had weighted scores above the standard deviation (70); one of these was "Above Average" in efficiency and the other was rated "Good." The same applies to the Hysteria scale. Most of the other weighted scores in this 70-80 block were "Good" employees, with 1 out of 5 in the Hypomania group receiving a "Below Average" efficiency rating.

#### CONCLUSIONS

1. The duties of the psychiatric aide have been of a very routine nature in the past, and self-expression and initiative have not been encouraged. Under such conditions, the individual of dull normal intelligence with a tenth grade education has worked out best. We expect to remedy this situation by offering to the more intelligent aide an opportunity for further training and personal advancement in our 3 year School of Psychiatric Technology. The net result should be that the efficiency of the aide should be in direct proportion to his intelligence, educational development, and personality adjustment.

2. The psychiatric aide is one of the most important figures on the care and treatment team in all psychiatric hospitals. The aide is with the patients on his ward more hours per day than any other individual in the treatment team and is thus in a position to know the patient better than most others in

TABLE 5  
SCORES OF 100 PSYCHIATRIC AIDES AT THE ARKANSAS STATE HOSPITAL ON THE MINNESOTA MULTIPHASIC PERSONALITY  
INVENTORY COMPARED WITH EFFICIENCY \*

T. score	Hypochondriasis			Depression			Hysteria			Psychopathic deviate			Male-Female		
	Tot.	B. A.	A. A.	Tot.	B. A.	A. A.	Tot.	B. A.	A. A.	Tot.	B. A.	A. A.	Tot.	B. A.	A. A.
90	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..
80	..	..	..	..	..	..	..	..	..	100%	..	..	..	..	..
70	2	..	1	2	..	..	2	..	..	3	..	..	7	..	1
			50%							33%					14%
60	5	..	..	15	..	1	12	2	1	9	3	..	17	5	0
						7%		16%	8%	23%	8%			29%	
50	18	2	1	49	16	8	47	13	6	6	9	..	54	13	7
		11%	6%		33%	16%		28%	13%	16%	23%			24%	11%
40	49	17	8	32	7	2	31	8	4	3	..	..	18	5	3
		35%	16%		22%	6%		26%	13%	25%	..	..		28%	16%
30	24	4	2	2	..	1	8	..	..	1	..	..	4	..	1
		17%	8%			4%				50%	..	..		..	25%
20	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	100	23	12	100	23	12	100	23	12	100	23	12	100	23	12

\* Norm = 50.  
S. D. = 20 (T. scores of 30 and 70).  
Tot. = Total.  
B. A. = Below average in efficiency.  
A. A. = Above average in efficiency.

TABLE 5—CONTINUED  
 SCORES OF 100 PSYCHIATRIC AIDES AT THE ARKANSAS STATE HOSPITAL ON THE MINNESOTA MULTIPHASIC PERSONALITY  
 INVENTORY COMPARED WITH EFFICIENCY \*

T. score	Paranoia			Psychasthenia			Schizophrenia			Hypomania		
	Tot.	B. A.	A. A.	Tot.	B. A.	A. A.	Tot.	B. A.	A. A.	Tot.	B. A.	A. A.
90	..	..	..	..	..	..	..	..	..	..	..	..
80	..	..	..	..	..	..	..	..	..	..	..	..
70	I	..	..	I	..	..	I	..	..	..	20%	..
60	11	I	I	4	I	..	7	I	2	8	I	3
	..	9%	9%	..	25%	..	..	14%	29%	..	13%	37%
50	43	10	4	10	I	I	17	2	..	37	7	4
	..	23%	9%	..	10%	10%	..	12%	..	..	19%	11%
40	36	12	6	62	16	7	55	15	7	38	12	3
	..	33%	17%	..	26%	11%	..	27%	13%	..	32%	8%
30	9	0	I	21	5	4	18	5	3	12	2	2
	..	..	11%	..	24%	19%	..	28%	16%	..	16%	16%
20	..	..	..	2	..	..	2	..	..	..	..	..
	..	..	..	..	..	..	..	..	..	..	..	..
	100	23	12	100	23	12	100	23	12	100	23	12



the hospital. The effectiveness of therapeutic procedures will be determined to a great extent by the competency of the aide, who is required to assume many duties that are becoming more and more of a professional nature. It is thus highly important that only well-integrated individuals be accepted into this profession, so as not to endanger further the health of the patients under their care, or of themselves.

3. The Minnesota Multiphasic Personality Inventory is effective in eliminating psychopaths who apply for the position of psychiatric aide, but is ineffective in predict-

ing the efficiency of psychiatric aides in the Arkansas State Hospital with deviate scores in other categories of personality maladjustment. In cases that warrant a more thorough personality study, projective techniques may be used.

4. A psychological screening program of applicants for positions as psychiatric aides can be carried on in most hospitals at a relatively small cost by administering psychological examinations to groups of applicants one day per week. This can be handled even in hospitals that employ part-time psychologists.

## PEPTIC ULCER—FACTS AND ASSUMPTIONS

EUGEN KAHN, M. D., KNONAU, SWITZERLAND,

AND

F. A. FREYHAN, M. D., FARNHURST, DELAWARE

The contemporary scientific literature elaborates impressively the psychosomatic and psychosocial aspects of peptic ulcer. Perhaps no other physical illness has undergone so radical a change with regard to its etiological factors, or has become so strongly associated with psychodynamic concepts. The question whether ungranted things are taken for granted arises if one studies the repercussions of the scientific publications in the newspapers, magazines, and on radio programs. As we looked over the printed material on peptic ulcers devoted to the medical profession as well as to the laity, three ever-repeated statements emerged: (1) that peptic ulcer has shown an increase during the last few decades, (2) that it is the aggressive-dependent personality that has a particular proneness for peptic ulcer, and (3) that "our civilization" breeds peptic ulcer.

As we felt uneasy about the positivistic manner in which these claims were made, intimating scientific finality, we began an informal inquiry into the established facts. We carefully studied the scientific literature. We compared reports from here and abroad. We had the kindest cooperation of a number of physicians who are thoroughly in the know on psychosomatics in general and on peptic ulcer in particular. To obtain statistical material we wrote to the American Medical Association and to clinical research centers, among them the Mayo Clinic and the Lahey Clinic. We feel obliged to report briefly the results of our inquiries and wonderings. They taught us a great deal, and they may be useful to others too.

(1) There are absolutely no statistics available in the United States concerning the incidence of peptic ulcer that would permit drawing any conclusions as regards the increase or decrease of the affliction. Textbooks, articles, and hospital communications vary greatly in their estimation or abstain from formulations because of the absence of acceptable statistics. The only reliable

statistics that we were able to find deal with the decrease of, especially stomach ulcer, mortality (Metropolitan Life Insurance, Statistical Bulletin). We discovered an urgent need to differentiate between the increased frequency with which the diagnosis is made owing to greater diagnostic alertness and improved investigative tools—and objective indications of increase of the frequency of the disorder. Some authors have examined hundreds of patients, others only a handful. Many are, or were at the time of publication of their respective reports, sure of whatever results they believed they had. That certain results were contradictory to others did not induce them to question or reexamine their findings. The general impression that peptic ulcer increased during the last decades cannot at any rate be bolstered up by reliable facts. There are no figures to speak of in earnest; there are no statistics.

(2) A concept of ulcer personality is widely proclaimed in the psychosomatic literature. We do not hesitate to believe that there are people with peptic ulcers who are aggressive-dependent in the manner prescribed by psychosomatic authorities. However, there are very few peptic ulcer patients who were investigated as intensively as requested by the psychosomaticists. One might have thought that the discovery of the alleged ulcer personality would turn the pathogenetic scales toward the constitutional side—toward some predisposition of which the aggressive-dependent tendency was one among other phenotypical manifestations. Such possibilities have been discussed, if vaguely. The emphasis was brought to bear more and more upon so-called oral needs—the unconscious wish to be loved, helped, and fed. The popularity of this concept seems rather astounding in view of the fact that no attempt has been made to demonstrate the causal relationship between the psychodynamic findings and the development of peptic ulcer. On the positive side there are a great many person-

alities with such unconscious cravings who do not have peptic ulcers. On the negative side, as has been pointed out again and again, a substantial number of peptic ulcer patients are of totally different and quite various-makeups. The methodological weakness in the elaboration of the specific personality features as related to peptic ulcer (and other disorders) concerns the issue of selective and random population material. We do not seem to know whether the psychodynamic features observed in a small number of peptic ulcer patients, *i.e.*, a selective sample, are at all specific unless we ascertain that the same features do not prevail among personalities without psychosomatic disorders through psychological studies of random population samples. It appears quite premature to postulate a causal relationship between fixed psychodynamic factors and peptic ulcer.

(3) The question as to whether "our civilization" breeds peptic ulcer necessitates an awareness of the relativity of historical evaluations. There is little reality in the notion of the "good old times" as contrasted with our insecure anxiety-ridden age. Are we naive enough to overlook that anxiety and frustration were abundant in times of economic servitude, religious wars, collective migrations, mass killing epidemics, and burning of witches? Were people not afraid to die during other historical periods—even so-called peaceful ones? Was the struggle for the daily bread, for physical and economic survival less disturbing in times without machines—and without social legislation? Many believe that it is mostly the hustling executive in business, politics, and the armed services who gets his peptic ulcer. But there are executives galore, including aggressive-dependent ones, who never have any trouble with their digestion. Or it is assumed that we must see the damaging influences of our times on the gastric and duodenal mucosa in the fast tempo of living and the competitive aspects of our society. Yet—as far as available reports can be believed—there are about

as many ulcer patients among the Chinese in China as there are in the white population of the United States. The Chinese are believed to be psychologically quite different from the Western population and are not exposed to the man-eating civilization in the same measure the citizens of our country are. And there are reports about the high incidence of peptic ulcer among Norwegian fishermen, generally assumed to be sturdy and even-tempered, whose ways of living have changed but little with the advance of the times.

There is a thought-provoking difference in the sex distribution of peptic ulcer. It appears to be generally agreed that the male sex carries the lion's share of the disease. We are not prepared to give an explanation thereof. Logically one would be inclined to assume that women, always regarded as the more emotional of the two sexes, would be more apt to fall victim to peptic ulcers. Especially in view of the fact that the female sex has to stand up relatively more to the hardships of this civilization under conditions that deeply touch upon the tasks of a wife and mother and have brought forth a legion of self-supporting women—including executives in business and politics. But the female sex does not falter under this impact—certainly not in respect to the ulcer problem. Why not?

Where do we stand then in this question? What do we know and what can we learn?

The lesson would seem to be a serious one. We are confronted with a lack of distinction between established facts and impressions. Findings that have restricted value have been generalized; their importance has been inflated. We can no longer afford to ignore the necessity of modern statistical inquiries in matters of incidence and frequency. Nor can we expand observations based on a small selective group of individuals into generalizing formulations on etiology. There appears to be an acute need for scientific restraint or the dissemination of psychosomatic news will acquire an air of propaganda rather than established truth.

# HISTORICAL NOTES

## THE WORD PSYCHIATRY

Further to our note (February 1951 issue) on the early appearance in the literature of the word psychiatry and Heinroth's use of this term in 1818, Dr. Edward L. Margetts has called attention to its appearance in the first volume of *Beyträge zur Beförderung einer Kurmethode auf Psychischen Wege*, published 10 years before Heinroth's book. Dr. Winfred Overholser has been kind enough to procure from this journal in the Army Medical Library extracts in which the word *Psychiaterie* is used. The title page of the *Beyträge* is reproduced herewith.

Beyträge  
zur  
Beförderung  
einer  
Kurmethode  
auf  
Psychischem Wege

Herausgegeben  
von  
Johann Christian Reil  
und  
Joh. Christ. Hoffbauer  
Professoren zu Halle

Erster Band

Halle  
In der Curtschen Buchhandlung  
1808

The table of contents of this issue, apparently the second number of Volume I, is as follows:

- I. Ueber den Begriff der Medicin und ihre Verzweigungen, besonders in Beziehung auf die Berichtigung der topik der Psychiaterie, vom Prof. Reil. .... 161
- II. Ueber den Wahnwitz, seinen Unterschied vom Wahnsinn, der

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Dummheit und dem Blödsinn, und seinen Zusammenhang mit dem Wahnsinn, vom Prof. Hoffbauer. 280

- III. Ueber die scheinbare Manie, nebst einigen Bemerkungen über die Behandlung der wahren Manie, vom Prof. Hoffbauer. .... 295

Passages from the article by Prof. Reil published in 1808 follow:

Es giebt nur eine Medicin, sofern es eine Naturkunde ist, die auf den einen Zweck der Heilung angewandt wird. . . . Auch kann die Trennung der Medicin in Chirurgie, Arzneykunde und Psychiaterie, weder von der Differenz der Krankheiten, noch von der verschiedenen Qualität der Mittel, an sich betrachtet, ausgehen, durch welche sie geheilt werden. Denn wenn auch die drey Seiten des Menschen in seinem gesammten Handeln, wie in seinem Leiden, sich in sehr verschiedenen Verhältnissen offenbaren, und in seinen Krankheiten bald die psychische, bald die chemische oder mechanische Seite, als hervorstechend verletzt, erscheint; so ist damit doch keine absolute, sondern eine bloss relative Differenz gesetzt, Sintemahl keine jener Seiten allein, sondern alle zugleich, nur mit einem Ueberwiegen der einen oder der andern, afficirt werden kann. . . .

. . . . Das Problem, was die Psychiaterie aufzulösen hat, ist: welche Veränderungen des Organismus sind durch primäre Eindrücke auf die ideelle Seite desselben, Behufs der Heilung seiner Krankheiten, möglich? . . . .

. . . Auf den untersten Stufen der Organismen, wo noch das Ideelle ganz in der Materialität versunken ist, kann bloss Arzneykunde und Chirurgie seyn. Auf den höhern Stufen keimt zwar, mit der Entwicklung der Seele, die Möglichkeit einer Psychiaterie auf; aber sie bekömmt erst in der Menschengattung, in welcher das Ideelle am wenigsten verhüllt hervortritt, eine solche Existenz, in welcher sie als vollendetes Glied den übrigen Zweigen der Medicin zur Seite treten kann. . . . Psychiaterie, Arzneykunde und Chirurgie, sind die drey Hebel der Kunst, die der Arzt einzeln oder alle ansetzt, wie der Fall es erfordert. . . . Man kömmt dadurch schneller zum Zweck, und heilt auf diesem Wege Krankheiten der Seele, die bey einer unvollständigen Kurmethode unheilbar sind. Denn das Heilen beruht auf einem solchen Stellen des Aeussern, dass dadurch die Heilkraft der Natur das Uebergewicht bekomme. Oft ist es genug, dass nur einige, oft müssen aber auch alle Aussenverhältnisse bestimmt werden, wenn jenes Uebergewicht eintreten soll. Wie oft mögen Curen mancher



Krankheiten, besonders der Nervenkrankheiten, der Hypochondrie, Hysterie, Fallsucht u.s.w. deswegen misslingen, weil ihnen dieser Charakter der Vollständigkeit fehlt.

These are remarkable passages. In his initial sentence Prof. Reil says, "There is only one Medicine, insofar as it is a natural science, which has a single object, cure." He indicates that medicine has three aspects: surgery, drug therapy, and psychiatry, but that all must be considered together since in illness the three sides of the human being, the "psychic," the "chemical," and the "mechanical," may all be affected together, with only a preponderance on one side or another. Reil insists repeatedly on giving full consideration to all aspects of human life in order to apply the proper treatment measures; and likewise that the physician must have regard for all three sides of medicine if his treatment is to succeed. Often, he says, all the external relationships of the patient must be regulated if conditions are to be made favorable for the curative power of nature to be effective. It is the quality of "completeness" of applied medicine that he demands, and throughout he gives psychiatry equal status with medicine and surgery.

We also have a communication from Dr. W. W. Elgin making reference to the article on libraries in the Encyclopedia Britannica, wherein it is stated that the Library

of King Osymandyas in ancient Thebes in Egypt bore an inscription the Greek equivalent of which was *Ψυχῆς ἰατρεῖον*.

The source of this information in the Britannica is Diodorus Siculus, the Greek historian, who visited Egypt probably about the middle of the first century B.C. and relates his observations there in his "Library of History." We have consulted this source in the Loeb Classical Library. Here Diodorus describes the magnificent sanctuary erected by King Osymandyas, who has been identified as Ramses II (1300-1236 B.C.) and whose monument is known as the Ramesseum. Diodorus enumerates the several chambers of the Ramesseum, elaborately adorned with painting and sculpture, and continues: "Next comes the sacred library, which bears the inscription, 'Healing-place of the Soul,' and contiguous to this building are statues of all the gods of Egypt."

Diodorus translated the hieroglyph inscription into Greek as *Ψυχῆς ἰατρεῖον*. He did not join the words, and the word psychiatry was therefore not coined at this time. Whether some later writer between the first century B.C. and the beginning of the nineteenth century A.D. performed this operation we have not yet learned. It is of special interest that bibliotherapy thus found sanction in the thirteenth century B.C.

## COMMENT

### CHILDREN AND YOUTH AT MIDCENTURY

On December 3, 1950, nearly 6,000 persons from the United States and territories with many foreign observers began the 4-day sessions of the midcentury White House Conference on Children and Youth, traditionally held every 10 years.

A number of features of the Conference should be of interest to every psychiatrist in the United States. Its magnitude precludes complete coverage; only a few broad areas can be touched upon here.

The focus of the Conference was how to provide each child with a fair chance to achieve a healthy personality. In the words of the National Committee:

The purpose of the Conference shall be to consider how we can develop in children the mental, emotional, and spiritual qualities essential to individual happiness and to responsible citizenship, and what physical, economic, and social conditions are deemed necessary to this development.

Despite this comprehensive goal, no facet of child development worthy of consideration was overlooked either in general session, in the panel discussions, or in the work groups. Home life, parental attitudes, community forces, standards of living, the influence of communications and schools were explored as were the many special situations—such as those of the child handicapped by physical, mental, or emotional limitations. And lastly community resources were examined to determine how best to meet the real needs of children and youth.

Gaps in our knowledge about children were delineated and the need for a more interdisciplinary approach to research was stressed. Inequalities of opportunity and injustices growing out of cultural differences were sharply censured.

Several features served to make this Conference unique. Citizen participation in a White House Conference was never greater or more comprehensive. For a year and a half people from all over the country representing local communities, regions, states, re-

ligious, labor, racial, and national groups had been busy with study and fact findings. Their labors resulted in 4 books for each registrant: Report on Organizations, Report on State and Local Action, Fact Finding Report—A Digest, and A Chart Book. Citizen participation was the watchword of the Conference. Through the panel discussions, work groups, and more especially at the plenary session on the last day, each individual had an opportunity to be heard.

This was the first conference in which youth participated. Five hundred young people representing 40 youth groups were active not only in the preparation but also in the Conference itself. Throughout they were insistent that they be permitted to work *with* adults in the solution of their own as well as community problems.

In no other conference of national scope has there been so much team work between the professions. No one group sought to dominate—all were absorbed in how children and youth might best be served. At no time was the child dismembered—throughout he remained “whole.”

The high point of the Conference was reached on Thursday in the plenary session to act on recommendations and resolutions. Here was democracy in action—differences shared in free and full discussion, in the spirit of cooperation according to accepted rules of order. Step by step resolutions were adopted encouraging further study and research in the child and his maturation, family education to strengthen parental confidence, expansion of programs for the handicapped child, further improvement in juvenile court services and procedures, and the inclusion of instruction in basic principles of human growth and development in all professional schools, to mention only a few. This session was truly a citizens’ meeting, in many ways comparable to the “town meeting” of early American history. It should do much to quell

the fears of those apprehensive of government control.

To reiterate, the Conference was focused on the *whole* child, from the time work began until the last moment of the final session.

It is obviously too early to define just what will come out of the Conference, what the results will be in the way of improved programs for and with children and youth here and elsewhere in the world. However, this much can be said: Never before have so many people been directly involved on the

local, state, and national level in a mutual concern. Though nothing should come of the Conference itself—which is unthinkable—the countless meetings of committees, councils, and commissions on each level of organization have served to alert more people in more different ways to our problems and our responsibilities to our youth and our tomorrow. It might well be the beginning of an active national program of preventive mental health services.

REYNOLD A. JENSEN, M. D.

### SEX OFFENDERS AT SING SING

One of the most poignant surprises for the psychiatrist working in a prison population is the eager cooperation of the great majority of prisoners. This is apt to come somewhat as a shock in an atmosphere of concrete walls, spaced machine-gun emplacements and the sullen, dispiriting, day-by-day business of "doing time."

To the student of criminology the study of 102 sex offenders conducted by Dr. David Abrahamsen<sup>1</sup> will prove of great interest. Appended to this study is the text of some very striking new legislation passed by the New York State Legislature in response to the findings and suggestions of the Report. This work is a tribute to the energy and clinical acumen of Dr. Abrahamsen and his co-workers, as well as to the foresight and social alertness of Governor Dewey and the Commissioners who made the work possible.

To a certain extent the study arose from the necessity of clarifying certain psychiatric concepts, which from time to time had crept into the statute books and had become frozen, so to speak, although the language was no longer workable nor scientifically valid. For example, as recently as 1947 the New York State Legislature passed a bill providing that "sexual psychopaths be confined indefinitely until they were no longer sexual psychopaths and dangerous." This bill was very wisely vetoed by the Governor.

The term "Department of Correction," which is applied to the prison setups in most

states, means, or should mean, exactly what it says. Should the felon be serving a sentence of 2 years or 49 years, the emphasis, at least according to the intent of the statute books, should be on rehabilitation and the returning to the community of a useful, assimilable individual. Nevertheless, the general atmosphere of "doing time" and the tremendous rate of recidivism present a challenge that prisons, as they are oriented at present, are unable to meet. To be sure, the lot of the prison warden is not altogether pleasant. While in some instances still subject to political shiftings of the wind, it is his duty as a correctional officer to return rehabilitated individuals to the community; at the same time he is under the shadow of an ancient *lex talionis*, whereby he must assure an outraged society that its enemies are sufficiently unhappy.

The sex offenders who are the subjects of this Report were studied intensively by a clinical team of psychiatrists, psychologists, and psychiatric social workers. All of the 102 men studied were considered to be suffering from some type of mental or emotional disorder, although not usually so pronounced as to meet the definition of mental illness.

Many of the prisoners had previously been diagnosed as psychopaths, a term that Abrahamsen rejected because of the difficulty of defining it with scientific precision. On the other hand, the research seemed to lead to the general conclusion that it had been the prisoner's emotional needs, his desires, hates, fears, and loves, that had largely been re-

<sup>1</sup> "Report on Study of 102 Sex Offenders at Sing Sing Prison." State Hospitals Press, Utica, N.Y., 1950.

sponsible for his sex offenses. Almost all the men had histories of unusually unfavorable childhoods, with severe emotional deprivation, with neglect, rejection, and a background of usually domineering, often brutal, parents. Another factor dealt with was irrational motivation. Psychiatric examination frequently showed that the prisoner did not understand why he had committed offenses from which in retrospect he recoiled with horror and as to the motivation of which he was completely in the dark.

The Report also touches upon such factors as irrational hostility, resentment toward authority, and alcoholism. An incidental finding was that the intelligence of the offenders was for the most part equal to that of the general population.

In terms of treatability the 102 sex offenders were classified as follows:

- A. Offenders predisposed to crimes of violence, likely to commit new attacks if released, and not treatable by present known methods..... 18
- B. Offenders who because of personality, age, or alcoholism are not treatable at present and are likely after release to continue dangerous to public morals and to women and children. .... 32
- C. Offenders who could be placed in a treatment center with a good prospect of improvement before release..... 44
- D. Offenders who could be released on parole and treated on an outpatient basis..... 8

It will be observed that roughly one-half of the prisoners were considered untreatable by any known method. The Report further indicates that

- (a) Some offenders are in such deep emotional conflict that they respond best to extensive individual treatment;
- (b) Others who have built up strong defenses against feelings of insecurity and instability need guidance on an intellectual and superficial level;

- (c) Other offenders respond well to group therapy, and are more apt to disclose their emotional difficulties when they realize they are not alone.

Of the group, 40 prisoners were subjected to psychiatric treatment with results that were considered very encouraging; but it is, of course, too early to make any estimate of the final results of treatment. This would require a 5-year follow-up at the minimum. The interesting fact should be pointed out that a group of 8 Sing Sing inmates, all convicted of grand larceny, not sex offenders, voluntarily requested group treatment. Dr. Abrahamsen observes that such eager receptivity of the idea of treatment among prisoners may be some indication of better things to come.

Possibly the most interesting section of the Report is the 30 pages of Appendix, giving in clear layman's language a thumbnail analysis of each case, oriented around the principle of treatability.

The concept of the prisoner as a sick individual rather than a scapegoat or despised vehicle for society's antisocial drives is one that has been slow in developing. Someone has said that, whereas individual insanity touches the minority of the population, insanity of the mass, in terms of economic cycles, war fevers, or mass hysterias, is common enough to define normal mentality. This theme may explain in part the public's attitude toward the criminal.

This costly and publicly endowed project emphasizing, as it does, not the punishment but the possibility of treating prisoners augurs well. One likes to feel that it is part of the slow, but alas! sometimes retrograde process of civilization, with its emphasis on the essential dignity and worthwhileness of man.

HIRAM K. JOHNSON, M. D.



## NEWS AND NOTES

**CLEARING HOUSE FOR RESEARCH IN HUMAN ORGANIZATION.**—The Society for Applied Anthropology has established a clearing house for information concerning research projects in the various fields of human organization. The Society's newsletter dated February 9, 1951, states that they now have on file more than 250 research projects involving nearly 450 workers.

Investigators in this field are invited to communicate with Elizabeth Purcell, executive secretary of the Society for Applied Anthropology, 61 West 55th St., New York 19, N. Y.

**DIE NEUE ZEITUNG.**—This publication is the American newspaper in Germany. It is a daily published in Frankfurt and is now in its seventh year.

The scientific supplement accompanying the issue for January 31, 1951, is dedicated to the great psychiatrist, Karl Bonhoeffer, who died in 1948 and who "together with Emil Kraepelin, Alfred Hoche, Oswald Bumke, Karl Jaspers, and many others created for German psychiatry an authoritative position that is still undisputed throughout the world."

The supplement contains a brief historical review, "Vom Narrenturm zur modernen Heilanstalt," of the care of the mentally ill in Germany. It pays a left-handed compliment to the American film, "The Snake Pit," which it states has only served to promote confusion concerning actual conditions in the mental hospitals. Snake pits used to exist in Germany too, but not for many years.

**THINKING AND BEING.**—From the presidential address of Dr. W. Russell Brain, Section of Neurology, Royal Society of Medicine, October 1950:

Descartes said: "I think, therefore I am," but only a philosopher, surely, would identify thought with existence. As neurologists we should not be surprised that consciousness is most intimately linked with those basal nuclei which made their appearance in the course of evolution millions of

years before thought became possible, and since the days of our earliest vertebrate ancestors have sustained the life of the feelings.

**ATTENTION PRIVATE MENTAL HOSPITALS.**—In connection with the publication of the proceedings of the First World Congress of Psychiatry held in Paris in 1950 it is desired to include a list as nearly complete as possible of the private mental hospitals and sanatoria of the world. Such institutions are urgently requested to send their names to the Secretary of the Congress, Dr. Henri Ey, 1 Rue Cabanis, Paris XIV, France. Unfortunately, the expense of publication of the proceedings is such that it becomes necessary to request a registration fee of \$5.00 or 1500 French francs for each institution, the fee to be payable to the Treasurer of the Congress, Dr. P. Sivadon, Ville-Evrard, Neuilly-sur-Marne, Seine et Oise, France.

**AMERICAN ASSOCIATION ON MENTAL DEFICIENCY, ANNUAL MEETING.**—The 75th annual meeting of this Association will be held at the Hotel New Yorker in New York City May 23 through 26, 1951.

Medical, education, psychological, and other authorities professionally concerned with mental deficiency (as well as interested laymen) will present the latest developments in the care, treatment, and training of the mentally retarded.

Statisticians of the Association estimate that 7% of the population of the United States is afflicted with some degree of mental retardation because of brain impairment before, during, or after birth.

Richard H. Hungerford, president of the Association and director of the Bureau for Children with Retarded Mental Development in the New York City Board of Education, states:

In the light of present-day knowledge, all but a small percentage of the mentally retarded can be considered educable to some extent. Of these, most can be trained to take productive roles in our society, under varying forms of supervision. It is

of considerable importance, therefore, not only to the taxpayers of the nation but to those concerned with manpower sources in a mobilized economy, that every effort be made to salvage and develop this vast human reservoir. It is our hope that the New York convention of the American Association on Mental Deficiency will help to focus the attention of professional persons, legislators, social agencies, and, indeed, the entire nation on this long-neglected and tremendous problem of mental retardation.

**THE INDIAN PSYCHIATRIC SOCIETY.**—In Volume 1, Number 1 (1949) of the *Indian Journal of Neurology and Psychiatry* an article by Dr. E. A. Bennet, "Psychiatry in India and Pakistan," contains this passage:

The Indian Psychiatric Society was started in January 1947 with a membership of forty-two practising psychiatrists. The Council of the Society met in October 1947—that is after the partition of India—and resolved that the political division of the country should not interfere with the integrity of the Society and that psychiatrists from both Dominions should be eligible for membership. This decision is in keeping with the best traditions. Hitherto psychiatrists in civil practice have worked in relative isolation. Now it will be possible to share the administrative and clinical experience of others, and to lay down standards of training for psychiatrists and mental nurses.

At the second annual meeting of the Society at Allahabad January 1 and 2, 1949, the membership was reported as follows: honorary members, 8; corresponding members, 4; fellows, 46; members, 23; associate members, 10.

**AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE, ANNUAL MEETING.**—This meeting will be held in Baltimore, Md., May 3-5, with headquarters at the Institute of the History of Medicine of The Johns Hopkins University. The program in addition to papers on medical history will include the annual dinner and visits to places of medical historical interest.

The annual meeting of the Association is open to all those interested in medical history, and visitors will be welcome at all sessions.

For further information write to the secretary of the Association, Dr. Iago Galdston, 2 East 103rd St., New York 29, N. Y.

**WORKSHOP IN PROJECTIVE METHODS.**—A summer workshop in projective methods for the study of personality will be sponsored by the New School for Social Research, New York. Five courses will be given by leading specialists, three of which will be on the Rorschach method (introductory course, June 18-30, two advanced courses June 25-July 7 and July 2-7) and the other two consisting of an advanced course in figure drawing analysis (June 18-29) and a course on sentence completion technique (June 25-30). The courses may be taken for graduate credit. For information write to Mrs. Florence R. Miale, 860 Riverside Drive, New York 32, N. Y.

**RORSCHACH SEMINARS AT UNIVERSITY OF CHICAGO.**—The Department of Psychology, University of Chicago, will present two Rorschach workshops June 4-8 and June 11-15, to be conducted by Dr. S. J. Beck.

The first seminar will deal with techniques of administration and will be open to students at, or ready for, the interne level. The second seminar will be at the level of advanced clinical interpretation and will therefore be limited to psychologists and psychiatrists in clinical positions or practice. Each workshop will meet for 5 days, 2 sessions each day, 2 hours per session. For information regarding admission, fees, or University credit when desired, write to Dr. James G. Miller, Department of Psychology, University of Chicago, Chicago 37, Ill.

**DR. HOWARD A. RUSK RECEIVES AWARD.**—First clinician to be so honored, Dr. Rusk, director of the Institute of Rehabilitation and Physical Medicine of the New York University—Bellevue Medical Center, was selected to receive the 1951 Research Award of the American Pharmaceutical Manufacturers' Association. The award was presented at the annual session of the A.P.M.A. at Boca Raton, Florida, on April 2. Dr. Martin Lasersohn, chairman of the Research Board, referred to Dr. Rusk's research as "directly responsible for the rehabilitation to active useful life of many thousands of servicemen who sustained catastrophic in-

jury and crippling, as well as civilians handicapped from accidents and from such paralyzing diseases as poliomyelitis, multiple sclerosis, apoplexy, and cerebral palsy."

Dr. Rusk is an associate editor of *The New York Times* and holds the rank of brigadier general in the Air Forces Reserve. He was awarded the Distinguished Service Medal in 1945.

The Research Award of the A.P.M.A. was established in 1947, to be presented "in recognition of the work of an investigator who, during the recent past, has made a significant research contribution in the field of medicine or the medical sciences."

GEORGE WASHINGTON UNIVERSITY HOSPITAL APPROVED FOR TRAINING.—The Council on Medical Education and Hospitals of the A.M.A. and the American Board of Psychiatry and Neurology have approved a 2-year specialty training program for resident doctors in psychiatry at the George Washington University Hospital, Washington, D. C. The training program in psychiatry is conducted in cooperation with the staff of Saint Elizabeths Hospital under the direction of Dr. Winfred Overholser.

DR. THOMAS HAINES DIES.—Dr. Thomas Harvey Haines of Montclair, New Jersey, died on March 2, 1951, at the age of 79. Dr. Haines was born in Moorestown, N. J., and received his M.D. degree from Ohio State University in 1912. Prior to this he had taught philosophy and psychology at that University after taking his Ph.D. at Harvard in 1901.

During the first World War Dr. Haines was active as a field consultant and director of mental health surveys. He worked in that capacity for the National Committee for Mental Hygiene in many states, and during 1917-1918 he was psychological examiner at Camps Dix and Stuart. His work for the Government also took him to Washington as a member of the National Research Council's committee on the psychological examination of recruits. From 1932 to 1940 he was psychiatrist at the Payne Whitney Clinic, New York City. He was a Life Mem-

ber of The American Psychiatric Association.

SOUTHERN PSYCHIATRIC ASSOCIATION, 1951 MEETING.—The 1951 convention of the Southern Psychiatric Association will be held at the Carolina Inn, Pinehurst, N. C., December 10, 11. The proximity of Pinehurst to numerous medical centers and army and navy camps should assure large attendance at the 1951 meeting.

Members of the S.P.A. wishing to present papers should communicate early with the Secretary, Dr. Newdigate M. Owensby, Medical Arts Building, Atlanta, Ga.

VA HOSPITAL (LYONS, N. J.) INSTITUTE OF PSYCHIATRY.—This Institute, sponsored jointly by the VA Hospital, Lyons, N. J., and the New Jersey Neuropsychiatric Association, was held at the hospital April 18, 1951. The program included clinical demonstrations by the hospital staff, medical exhibits representing all the services, and scientific sessions dealing with recent advances—child psychiatry (Leo Kanner); epilepsy (H. Houston Merritt); neurosyphilis (Harry C. Solomon). In the evening S. Bernard Wortis discussed reactions to cortisone and ACTH and Leo H. Bartemeier discussed sleep and its disorders.

PSYCHOLOGICAL BOOK PREVIEWS.—A new journal bearing this name appeared in January 1951. It is published quarterly and the subscription price is \$4.50 per year. The editor is John W. French of the Educational Testing Service. Each issue contains 40 to 50 descriptive summaries of new psychological books, written by the authors, many of which thus appear prior to publication. In addition there will be a section listing critical reviews in American and British journals of English-language books in psychology and related fields. This list will cover around 300 books quarterly and will indicate each reviewer's over-all opinion and the length of his review. For subscriptions write to Psy-

chological Book Previews, 31 Markham Road, Princeton, N. J.

G. Eliasberg, 420 West End Avenue, New York 24.

DR. ROBERT H. GAULT TESTIMONIAL COMMITTEE.—This Committee has been formed in order to honor Dr. Gault on the occasion of the completion of 40 years of editorship of the *Journal of Criminal Law and Criminology*. Psychiatrists, psychologists, criminologists, and sociologists who are interested in the preparations may write to the Committee on Arrangements, Dr. W.

MORENO INSTITUTE FORMED.—This Institute, formerly the Sociometric Institute, has received a provisional charter from the Board of Regents, New York State. It specializes in the training of group psychotherapists, psychodramatists, and sociometrists. For further information write to the Moreno Institute, P. O. Box 311, Beacon, New York.

In every contest that goes on between Intelligence and Stupidity, between Enlightenment and Obscurantism, the powers of the dark have this immense advantage: they never understand their opponents, and consequently represent them as always wrong, always wicked, whereas the intelligent party generally makes an effort to understand the stupid and to sympathize with anything that is good or fine in their attitude.

GILBERT MURRAY

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## BOOK REVIEWS

PRÉCIS DE PSYCHIATRIE: Clinique-Psychophysiologie-Thérapeutique. By Dr. Henri Baruk. (Paris: Masson et Cie., 1950.)

In presenting the author to American psychiatrists one may say that he belongs to the pioneers who have applied the methods of pharmacological experimentation to psychiatry by producing experimental catatonia in animals with bulbocapnine. But as Baruk has pointed out in previous publications, the biological approach will not explain completely the basis of personality, emphasizing that one should not lose sight of the psychologic aspects of human behavior.

For this textbook of psychiatry the author has assembled a large amount of sound information, which was collected during 20 years as head of the Maison Nationale of Charenton. It was in this mental hospital, located in the suburbs of Paris, where Bayle in 1822 first recognized dementia paralytica as a separate disease entity, characterized by a clinical syndrome and pathologic-anatomic changes. Of late, the psychiatric teaching and working organization, as elaborated by Baruk at the Charenton institution, has been introduced in the Palestine mental hospital Ezrath Nachim, which is affiliated with the Faculty of Medicine of Jerusalem.

After a foreword, reviewing the pioneer work of some of the founders of psychiatry and expressing the author's personal views on the present-day concept of psychosomatic medicine, the text is divided into main sections, which are in turn subdivided into smaller chapters. There are discussions concerning the place that psychology has in psychiatry and its limitations in psychotic patients, particularly as far as therapeutic results are concerned. An instructive chapter deals with the examination of the mental patient and the interview with the family. The main clinical syndromes or reaction types are discussed in a scholarly manner, revealing the wide clinical experience of the author. One section is given over to the dementias and the organic psychoses, such as the mental disturbances, associated with cerebral arteriosclerosis, brain tumors, Wilson's disease. Huntington's chorea, etc., and the infectious psychoses, including here the behavior disorders of von Economo's encephalitis and rheumatic brain disease. In the section on therapeutic methods one chapter is entitled "The Etiologic Therapies." Baruk considers etiologic treatment as the ideal type of a therapeutic approach, which psychiatry should ultimately attain. Psychotherapy, on the other hand, should not be blindly employed, using always the same technique, and never without studying the clinical problem in its entirety. The final chapters deal with mental hygiene and the organization and equipment of a psychiatric hospital.

The scope of this text is practical and most useful. It is free of the overemphasis of the dynamic interpretation of the psychiatric disorders and does not propound certain schools of thought.

The book represents the best of contemporary French and continental psychiatry. To the psychiatrist who reads French and who wants to widen his sphere of interest, the book is highly recommended.

WALTER L. BRUETSCH, M. D.,  
Indianapolis, Ind.

THE COMMONSENSE PSYCHIATRY OF ADOLF MEYER.  
Edited by Alfred Lief. (New York: McGraw-Hill Book Co., 1948.)

Alfred Lief has performed a distinguished service by filling in a noticeable gap in the annals of American psychiatry. It is difficult to overestimate the significance of Adolf Meyer's contribution to this picture both in his writings and in his teachings, and yet, until this work by a layman, no attempt had been made to bring together the best of his precepts in one readable "anthology" and not much of his life was known except in scattered brief essays or obituaries. It is more than fitting that this volume should have appeared in the year of his death, at a time when perhaps his influence on the scene threatens to subside, when it is fashionable to have a somewhat scornful, albeit hazy, attitude toward psychobiology. At a time when there is much confusion in the minds of men everywhere, and no less confusion in the total medical and psychiatric scene, we need a "balance wheel," a firmer ground on which to stand, not only with our students but perhaps especially in the eyes of the lay public. In a rereading of the familiar passages of Meyer's papers, as assembled and edited by Lief, it seems we may find such a balance, a re-evaluation of old ideas, the profundity of which may have escaped us because of the naivete and uniqueness of the language in which they were presented.

Here in this brief review, we may not hope to estimate conclusively the relative place of Meyer's psychobiology in the light of the last 50 years of American psychiatry; we may have too short-range a viewpoint for such an ambitious undertaking. Neither do we wish simply to eulogize on the one hand or to assess critically the failures and omissions of a life's work on the other hand. Suffice it to say, that here we may only give Lief's accomplishments its due, that he has bravely and, to our mind, successfully reflected an era in American psychiatry, and the deep impression left upon it by one man, Adolf Meyer.

In reviewing Meyer's contributions to psychiatry, one is immediately struck by two things: one is the enormity of the task—the breadth of scope of his interest and the widespread effects of his ac-

tivities and teachings; the other is the gradual awareness of the miraculous coincidence that sometimes strikes in the history of man when two individuals are born at the same time and live to affect parts of that history in extremely different ways. Sigmund Freud and Adolf Meyer were two such men. The critical emphasis that has been placed on Meyer's rejection of psychoanalytical principles has not been entirely justified; in the first place, the facts indicate that he actually prepared the way on the American scene for a better acceptance of Freudian concepts, a fact admitted publicly by Freud himself, and that he was one of the earliest active members of several of the American societies organized to study further and utilize dynamic psychoanalytical principles. In the second place, no man could have undertaken and accomplished more than Meyer did in the revolution of psychiatric thought, principles, methods, and teaching in the early part of this century in America; if he did not always thoroughly understand, accept, and espouse the cause of psychoanalysis, we must consider that his interests and energies were entirely absorbed in a much broader field.

That this is accurately reflected in Lief's book is tribute enough to the comprehensive and well-organized nature of his treatise.

HARRIOT HUNTER, M. D.,  
Department of Psychiatry,  
University of Colorado  
School of Medicine.

**HELPING BOYS IN TROUBLE: THE LAYMAN IN BOY GUIDANCE.** By *Melbourne S. Applegate*. (New York: Association Press, 1950. Price \$2.25.)

From 24 years' experience as an active Big Brother, the author tells how he befriends and helps troubled, neglected boys, and describes the methods he has found effective.

In our opinion, this readable little book of 117 pages is the most effective description yet published of volunteer work at its best. Respect for the personality of the individual boy, and his potentialities for healthy development, regardless of that boy's behavior, is the keynote of the text throughout. This attitude of respect rules out preaching and direct efforts to change the boy. It means that encouragement and praise are used with discrimination, that advice is given sparingly and in the light of the boy's felt needs, that the principle of confidentiality is adhered to, and that the boy is given the security of complete acceptance.

The question is often asked: "What techniques can I, a volunteer worker, borrow from you, the professional worker?" This book is an effective answer to that question. The following quotation illustrates both the author's style and attitude:

"In endeavouring to be kind, sincere, respectful, and infinitely patient with the boy, I have no desire to make a maudlin approach to his problems. I want him to realize that I stand by ready to help,

but that I cannot serve him unless he takes definite steps to help himself" (p. 73).

D. STEWART MACDONALD,  
GORDON J. ALDRIDGE,  
Big Brother Movement,  
Toronto.

**MICROPHTHALMOS AND ANOPHTHALMOS WITH OR WITHOUT COINCIDENT OLIGOPHRENIA: A CLINICAL AND GENETIC-STATISTICAL STUDY.** By *Torsten Sjögren and Tage Larsson*. (Copenhagen: Ejnar Munksgaard, 1949.)

In line with the preferred investigative procedure used in Scandinavian population genetics, this Swedish study combines a total population census of congenitally blind persons with a special genetic analysis of microphthalmic and anophthalmic cases with (MO; 58 cases) or without (Mi; 79 cases) evidence of mental defect. According to Swedish regulations, education is compulsory for children with defective vision, and annual lists of all blind persons below age 20 must be submitted to the Inspector of Schools for the Blind by local school and health authorities. This arrangement made it possible for the authors to obtain a fairly precise estimate of the incidence of this evidently gene-controlled type of congenital blindness (150-170 cases) in the total Swedish population (6.84 millions at the end of 1947).

The general frequency of blind children of school age (7 years) in Sweden is said to be 0.31 per thousand. To this total number of blind school children, MO and Mi cases have been found to contribute about 8% (0.025 per thousand in relation to the total population), at approximately equal parts and with an apparently normal distribution of the sexes. The average life expectancy of MO cases seems to be 15-20% lower than that of the normal population, while no increased mortality (or only a very slight one) has been observed for Mi cases.

With regard to the mode of inheritance operating in bilateral microphthalmia (anophthalmia), the results of the study do not appear to have been fully conclusive. The authors are inclined to believe that microphthalmic cases with and without mental defect are genetically distinct entities, although this theory would be difficult to reconcile with the reviewer's observation that MO and Mi cases may occur in the same sibship. In the authors' opinion, Mi cases may largely be due to a dominant gene with a low degree of expressivity, while partial recessive sex-linkage with reduced expressivity is favored for the MO type of the disease. With respect to the latter type it is admitted, however, that some pedigrees apparently follow the pattern of ordinary recessive sex-linkage and that others indicate the possibility of new mutations "with a dominant appearance." Clinically it is especially important that the observed disease expectancy for the siblings of MO cases is about  $9 \pm 3\%$ , that the rate of parental cousin marriages has been found increased to 6%, and that no evidence has been obtained in favor of possible etiologic significance

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of syphilis or German measles in the mother during pregnancy.

Despite minor technical imperfections in the presentation of the data, including statistical discrepancies due to typographical errors and some terminological inconsistencies in the English version, this new monograph is to be recommended as a valuable contribution to the genetic analysis of special organic defects. On the whole, the volume is clearly organized and adequately illustrated, and even the English translation by Mrs. Erica Odelberg appears quite satisfactory.

FRANZ J. KALLMANN, M. D.,  
New York State Psychiatric Institute.

PRINCIPLES OF HUMAN GENETICS. By *Curt Stern*.  
(San Francisco: W. H. Freeman and Company,  
1949. Price: \$5.50.)

As a timely record of 50 years of rapid but rugged advancement of a modern science of genetics, the publication of this first comprehensive American textbook of *human genetics* marked a memorable and gainful occasion. Considering the numerous difficulties encountered in applying genetic analysis to man, it would seem remarkable in itself that a vast amount of fully documented information about the fundamentals of human heredity was available for presentation in a self-contained volume at this time. However, nearly equal importance was attached to the rise of a scholarly geneticist, who combined the knowledge, courage, and skill required for the writing of this masterpiece of an elementary textbook for students of human and population genetics.

In view of the highly diversified interests of prospective readers, it is likely that this urgently needed introduction to the intricate problems of human inheritance will find its critics, too. Either by choice or by necessity, the author has been selective as to applied topics and bibliographic references, and some general acquaintance with statistical methods and technical terms has been assumed throughout the clearly arranged 27 chapters of the book, which leads the reader from the genic basis of man's inheritance through the complexities of the Hardy-Weinberg law to the eugenic aspects of human diversity. However, cautious scholarship has never been abandoned for the sake of popular simplification, and the volume is strictly what it sets out to be, an introductory and authoritative guide to the basic principles and dynamic potentialities of human heredity.

Without reservation, therefore, this textbook may be recommended as a standard item for medical men as well as for all the other groups of professional workers concerned with the biological and cultural evolution of man.

FRANZ J. KALLMANN, M. D.,  
New York State Psychiatric Institute.

CHILDREN OF TODAY AND TOMORROW. By *Ethel Dukes and Margaret Hay*. Published by Allen and Unwin for the British Social Hygiene Council. (New York: Macmillan Co., 1949.)

In writing this book for parents, the authors take issue with books that make parents feel guilty by placing so much emphasis on parental influence. They discuss fully the influence of hereditary and environmental factors, attributing to heredity, to a large extent, temperament and emotional stability. In this country, where we stress the importance of parental attitudes, we would be less sure of the hereditary factor; for example, in the case of Norman (page 86), whose emotional instability appeared in early infancy and was therefore attributed to heredity, we would say that the troubles could have been just as well attributed to a maternal ambivalent attitude or medical mishandling. However, one can appreciate certain features of their approach: at any given time the parent wants to know what kind of child he has and what he can do about it. Making him feel guilty over what he may have done earlier has little therapeutic value.

The book is based on experiences in a child guidance clinic in England during the war. It is naturally British in its setting, and terms like "billets," "hostels," and "scholarship standard" appear frequently. One also gains the impression of work in a country where the cultural background is relatively uniform, in contrast to the clash of cultural attitudes so characteristic of this continent. One cannot help envying a clinic that can write: "Most child guidance clinics have knowledge of well-trying, suitable foster mothers with whom they can place such (problem) children for a time."

The children are classified in the following categories: Hypersensitive, dull, gifted, power-seeking, power-rejecting, hyperactive, manually unskilled, and overtalkative children. These children are discussed in terms of their assets, liabilities, and special needs.

The third section of the book describes several clinic cases in detail. The stated purpose is to give parents a clearer idea of what happens in child guidance clinics; this, they have found, is not sufficiently understood. Details are given of the "play therapy" sessions and sensible interpretations of the children's play are offered. The clinic's helplessness in dealing with selfish, power-seeking mothers (we might call them rejecting mothers) appeared in 2 cases; 2 fearful and repressed children were helped by treatment. One juvenile delinquent, whose psychological treatment was not supported by parental cooperation, was not helped and the child seemed on his way to becoming a "spiv." The sand trays in which the children build with sand and water appear very useful as a play medium and are used by all the children described.

BARBARA J. ASHENDEN,  
Children's Psychiatric Service,  
The Johns Hopkins Hospital.



**PSYCHOLOGY FOR THE PROFESSION OF NURSING.** By *Jeanne G. Gilbert, Ph. D. and Robert D. Weitz, Ph. D.* (New York: The Ronald Press Company, 1949.)

This is an elementary textbook for student nurses. Since both writers are instructors in nursing schools, they are familiar with the curriculum requirements and the nurses' needs.

The book consists of 3 parts, divided into 16 chapters. The first part presents fundamental principles of psychology. The meaning of psychology is defined and its application and usefulness in daily life, as well as in nursing, are presented. The chapters devoted to learning, including study habits and emotion, are of particular value to the young student starting a career in nursing.

Mental hygiene and the psychological aspects of nursing care applied to patients in general, children and the aged, convalescents and chronic patients in particular, are presented in part two.

Mental mechanisms, factors involved in growth and development, habit training, and adjustments necessary in caring for elderly patients are presented interestingly in this section.

Maladjusted personalities and other abnormal mental manifestations are briefly but clearly described in the third part.

The organization of the textbook will enable instructors to teach the basic principles of psychology during the preclinical period. Part two, dealing with application of psychological principles, might well be used, while the student is having experience with medical, surgical, obstetrical patients and in pediatrics. The third part would be appropriately placed preceding clinical experience in psychiatric nursing.

The authors have performed a valuable service for student nurses in preparing so practical and authentic a text for their use.

The book will also be of use to instructors teaching psychiatric aides, attendants, and practical nurses, as their students are likewise concerned with human beings and their problems.

MARY E. CORCORAN, R.N.,

National Institute of Mental Health.

**THE SHOW OF VIOLENCE.** By *Fredric Wertham, M. D.* (Garden City, N. Y.: Doubleday & Company, Inc., 1949. Price: \$3.00.)

Authors who are also psychiatrists invariably develop conflicts in their reviewers. On the one hand if they produce a volume primarily for general intelligent lay consumption such as this one, the reviewer usually wishes that the author had really produced the scientific text that he is most capable of writing. If, on the other hand, he turns out a text, the general public is kept in the dark on an important field. The present volume inclines toward the popular style and in general represents a series of cases handled by the author dealing with the ever fascinating problem of murder. Although the experience of the author is tremendous, nothing really new is introduced to the expert.

The book begins with a discussion of the problem of court psychiatry giving a short history and proceeding with an exemplary case. More cases

follow, all of which are well selected, excellently presented, and so neatly organized that they well uphold Dr. Wertham's reputation as a writer. Throughout these presentations one gains a fair knowledge of the working of psychiatry in this area and some of the difficulties encountered in dealing with the legal mind.

The longest chapter of course is a discussion of the famous case of Irwin, which he presents primarily from his personal viewpoint. Here one feels that the psychiatrist takes over and occasionally Dr. Wertham overemphasizes perhaps the importance of his decisions, letting his ego show slightly—a common habit in psychiatrists, but one to be deplored in an expert author. Without presenting all sides of the case it is impossible of course to arrive at a reasonable judgment and the result is a somewhat biased approach.

The last part of the book, *Mathematics of Murder*, is certainly one of the best and should be required reading for every worker in this field. Here the author's basic training tends to overemphasize the role of the psychiatrist in criminology, but his plea for prevention, based upon the changing "not only of man but of social institutions and rationalizations" is a sound one. His Epilogue answering Cain's age-old question with a firm and solid "Yes" is well worthy of consideration by every living person in this troubled and unsettled world.

DOUGLAS M. KELLEY, M. D.,

Bureau of Criminology,  
University of California.

**FUNDAMENTALS OF OTOLARYNGOLOGY: A Text Book of Ear, Nose and Throat Diseases.** By *Lawrence R. Boies, M. D.* (Philadelphia: W. B. Saunders Company, 1949. Price: \$6.50.)

This text book on diseases of the ear, nose, and throat can be recommended for the instruction of medical students and general practitioners. The text is well arranged and the illustrations are excellent. It covers the whole field of otolaryngology clearly, attractively, sensibly, and yet briefly. It is up-to-date and has a word to say for or against most of the latest treatments. On the whole the references are recent and well chosen.

Because of the brevity of the text it omits a great deal. There is very little argument regarding diagnosis or treatment. It therefore fills the need of many medical schools and of the average student who has to take a pass in otolaryngology.

In spite of its sketchiness much of the book will be a pleasure for the otolaryngologist to read, but various sections are written by associates of the editor and these are uneven in style and depth and value. Such points will be readily appreciated by the practising otolaryngologist who hopefully is looking for help and may be disappointed to find the object of his search dismissed in a sentence or not mentioned. Even if this criticism is admitted the book seems superior for its purpose to any comparable volume for students.

D. E. S. WISHART, M. D.,

University of Toronto.